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BEHAVIOR OF FLOORING

Panelizing

Description:

An un-natural behavior pattern of installed strip or plank flooring due to causes which occur naturally can be aptly described as "**Panelizing**". This appearance can develop during the first or even subsequent heating seasons. It is caused by flooring boards losing moisture to a drier interior environment and shrinking in groups. The groups of strips or "panels" may be any number of pieces and within this "panel", flooring pieces remain tight together. This transfers the aggregate shrinkage, or total shrinkage for all the pieces in the panel, into large gaps between strips on either side of the "panel".

Shrinkage of flooring pieces, in dry seasons, is normal and not at all unnatural. However, normally shrinkage of flooring pieces generally results in formation of hairline gaps beside each individual board or strip. Shrinkage of flooring pieces in **panels** is not natural and has some underlying cause. Gaps in "panelized" floors can be very noticeable and objectionable, and sometimes require professional attention.

Causes:

On a job site many external forces act on a hardwood floor, tugging, pushing and locking strips together. It is the external forces that create a panelized floor. No manufacturing or kiln drying procedure (nor lack of one) during production of the flooring itself can produce this phenomenon. Some causes more commonly found behind "panelizing" are:

Foundation settlement: Perimeter foundation settlement can cause a traditional joist floor structure to stretch across the center beam of a home, resulting in gaps between pieces in surface floors. If the settlement is extreme, a "jack-knifing" effect in the joists may also result. In this instance, humps will be formed in the floor, caused by the raising of joist ends near the center beam. (In a strictly technical sense, this effect is not "Panelizing" but just large abnormal gaps.)

Gaps or "panels" caused by foundation settlement usually occur near the center beam, and often are limited to one or two major cracks. They can occur elsewhere, however, particularly when plywood is the subfloor. "Panels" in this case will follow the seams of the plywood subfloor.

Floor finish edge-bonding: Although the process is not fully understood, apparently some types of surface finishes such as polyurethanes seep between flooring strips. A panel edges@, the "panelizing" effect takes place.

Makers of floor finishes are undecided as to the exact cause, but floor finishing mechanics are advised to employ the total system specified by the finish makers. Skipping a required sealer coat may at times contribute to a panelizing effect.

Subfloor movement: Subfloor material often must remain exposed to the elements for days or weeks while the building is under construction. Subfloor material suitable for nail-installed hardwood flooring will absorb excess moisture from exposure to rain or high humidity, and will begin to lose the moisture as soon as the environment becomes drier (when the roof, windows and doors are in place and the house is Adried-in@). When this occurs, the subfloor material, joists, beams, and every wood component with high moisture content, will shrink and move. Subfloor shrinkage and/or shifts caused by framing movement that occurs after installation of flooring can result in gaps between pieces in wood floors. These may appear in any sort of random pattern, including "Panelizing".

"Panelizing" is most often caused, in the case of subfloor shrinkage, by movement of subfloor panels (4' x 8' plywood, for instance). Plywood has been shown to retain fasteners well. As both the plywood and flooring dry, the plywood tends to pull flooring strips along panel edges in opposite direction, due to a newly established occupied environment, or seasonal changes associated with heating. This characteristic sometimes produces a "panel" effect in the surface hardwood flooring, with separations roughly corresponding to edges of plywood panels. This is most likely to occur along the long dimension of plywood panels parallel the direction of flooring strips.

Cures:

The remedy often demanded by unhappy owners, is to remove and replace "panelized" floors with new flooring material. However, this is usually not the best cure, because if the cause for "Panelizing" is still there or repeated, it will happen again with the new floor.

Also, once hardwood flooring has settled-in to its occupied environment, particularly after going through a drying period to remove the extra moisture typical of a new home (i.e. moisture trapped inside during construction) it is less likely to misbehave than would a new floor brought in from a different moisture environment. Whenever possible, it is advisable to repair the existing floor and re-coat or refinish as necessary. In a settled moisture environment, the existing hardwood floor is the best choice for future trouble-free service and is less trouble for the occupants, as it has already acclimated.

The cure for panelizing is, of course, to remove or repair the gaps. A number of options are available and any or all may be required on the same floor. Some of these are:



_ Removal and replacement of selected boards: Where large "panelized" cracks occur near a wall or other vertical obstruction, those boards nearest the wall can sometimes be removed and reinstalled to eliminate the gap. Where possible, replace the same boards in the same sequence as they were removed. This will allow simpler finish repairs.

_ Filling gaps: Gaps between flooring pieces that are less than 3/32" may be properly filled with a color-matched wood floor filler. Filling should be performed when the moisture content of the flooring is at its median stage, halfway between its highest and lowest seasonal readings. Typically in four-seasonal areas, this will occur in late spring or fall.

The filler should be sealed with a similar finish on the floor or the entire floor may need screening and coating where more extensive filling is required.

Every year the flooring will expand with moisture gain and shrink with loss of moisture, so the trick is to fill the cracks when the filler line will be small enough not to be squeezed out as the floor expands, but large enough to leave the smallest possible crack in dry seasons. For gaps wider than 3/32", filler may be squeezed out as the flooring expands in humid seasons, or the filler itself may break with chunks of filler vacuumed away, leaving a jagged-edged gap. If there are many gaps near 3/32" wide in a small area, then more extensive repairs may be necessary.

In all cases, repairs should be performed by an experienced floor finisher whose judgment should be relied on to provide the proper remedy for each circumstance. Experience is the best teacher in deciding which gaps will hold filler, which need adjacent boards to be reinstalled, or wider boards custom fit to replace cracks, and how best to match the filler to the surface.

If only filling has been necessary, and if the floor has a polyurethane coating or seal-and-wax finish, the finish can normally be repaired very simply after the filler is well dried. First, buff the floor with a NO 120 or finer screen, and clean thoroughly (vacuum, tack). Then re-coat with one coat of polyurethane. For seal-and-wax finish apply sealer to filled areas then re-wax with colored wax to match the original finish.

White-finished floors offer some potential problems due to the nature of the pigmented coloring, and where it lies within the finish. The above technique can be tried, and if results are unsatisfactory, full refinishing may be indicated.

If boards are replaced with new, un-sanded stock, it will probably be necessary to re-sand and re-finish the entire floor.

