

Best Practice Guidelines to minimise fasteners popping

GIB® Information Bulletin
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INTRODUCTION

Like most builders, you probably back your work with a warranty under which you'll return to a customer's home near the end of the first year to tweak doors, patch popped nails or silence squeaky stairs. Some of the routine repairs you'll make to trim, walls, floors, ceilings, stairs, and doors are related to the shrinkage and swelling of wood.

By accommodating wood movement right from the start with smart construction details, you can reduce time and expense when making good on your promise. Though it can't be eliminated, wood movement can be minimised, masked, and otherwise managed through attention to detail during design, installation and finishing.



'**Popping**' describes the protrusion of fastener heads through the finished surface of plasterboard. Popping may not become visible for some considerable period after completion. They may be just sitting there hidden under the paint until something like a door is slammed or the house moves slightly.

Note: The information below is provided by Winstone Wallboards by way of general guidelines only. These guidelines are of a general nature and are not a substitution for recommendations, regulations or other requirements relating to the underlying structures which typically give rise to fasteners popping. Investigation should be carried out on a case by case basis to establish the cause of particular issues and to determine the most appropriate corrective action. For more information refer to the GIB® Site Guide or relevant system technical literature. Our Technical Helpline can be contacted weekdays on 0800 100 442.

WHAT CAUSES POPPING?

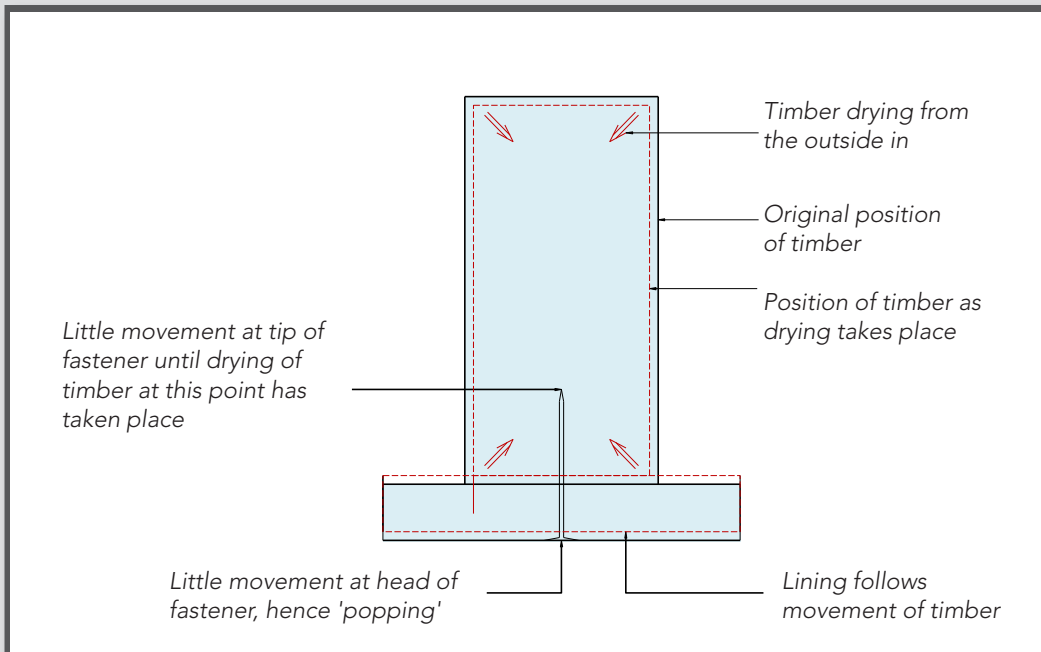
1. SUBSTRATE MOVEMENT: Popping can be attributed to movement in the substrate. Timber substrates are more prone to temperature or moisture induced movement and shrinkage.

Timber dries from the outside in. Therefore shrinkage occurs from the outside in. Refer to diagram overleaf.

A screw or nail that penetrates to a reasonable depth within the timber will span the area on the outside that is shrinking, and also the area further in that has not shrunk yet. Because of this the screw or nail does not move. However, the board glued to the outside of the timber that is shrinking does move inwards, causing pops. An example of this is timber decking that shrinks as it dries (mainly in summer) leaving the nails proud.



WHAT CAUSES POPPING...CONTINUED



2. INCORRECT FASTENERS: Overly long fasteners are one potential contributing factor and therefore, it's important to use the correct type and length fastener for each specific lining system.

3. FRAMING NOT ALIGNED: Improperly aligned, bent, twisted or warped framing can result in popping (e.g. nail plates or hold down ties not set flush with the framing or loose attachment of the plasterboard to the framing).

4. INCORRECT INSTALLATION: Improper fastening method is another factor (e.g. skew nails not driven home, damaging the plasterboard face paper or the core).

HOW CAN YOU MINIMISE POPPING?

As substrate movement is the biggest contributing factor to popping, it's important to adhere to the following guidelines.

MOISTURE CONTENT IN TIMBER MUST BE LESS THAN 18% AT THE TIME OF LINING: The GIB® Site Guide requires the moisture content of timber framing to be 18% or less at the time of lining.

Winstone Wallboards recommends a lower moisture content (12% or less) if air conditioning, heat pumps or central heating are to be installed; as the equilibrium moisture content of the timber could be as low as 8% once the systems are fully operational.

This is a real challenge during wet winter months however remember that a 5% moisture change can result in a 1mm dimensional movement in timber. It is therefore essential that the moisture readings are taken accurately and that the timber treatment and temperature 'correction' factors are applied to achieve accurate readings.



Moisture Meter

Here are some other best practice steps to help minimise the risk of popping.

USE METAL CEILING BATTENS: Metal ceiling batten systems provide a stable substrate for plasterboard ceiling linings as they are non-responsive to the effects of moisture or humidity. Regular users of metal batten systems consistently have fewer call-backs for movement related ceiling defects such as peaking or cracked joints and popped fasteners. The use of 13mm GIB® Standard plasterboard with GIB® Rondo® metal ceiling battens have been well proven to be a cost effective ceiling lining system in residential housing.



USE SCREWS: GIB® nails can be used for fixing to timber wall framing. However, screws are the preferred method for fixing plasterboard as pops are fewer and less pronounced. First, for the same holding power, screws are typically shorter than nails, so there is less wood between the screw tip and framing face to shrink. And secondly, it takes higher pressure to force the plasterboard along a threaded shank than it does to slide it along a smooth one.

Refer to the GIB® Site Guide for minimum guidelines on the use of fasteners for timber frames (e.g. horizontal and vertical fixing on walls and ceiling installation).

ENSURE LININGS ARE FLUSH WITH FRAMING: Whenever the back of the plasterboard is not held tight and secure against the face of the framing substrate by the head of the fastener, a potential fastener pop exists.

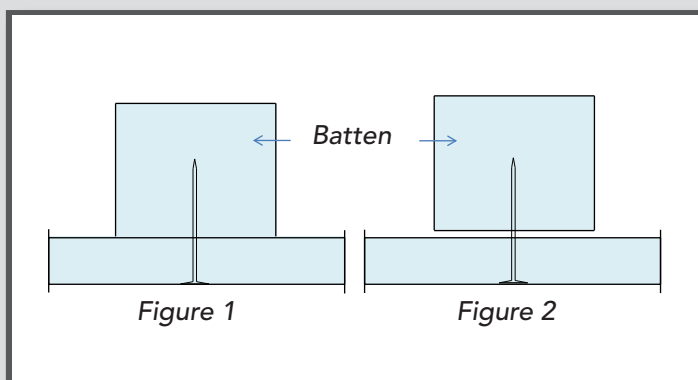


Figure 1: Nails are less likely to pop when plasterboard is nailed tight against framing substrate.

Figure 2: Any inward pressure on the panel will push the nail head through the thin covering of joint compound.

FASTENERS MINIMUM OF 200MM FROM ADHESIVE: If fasteners are applied through or adjacent to a daub of adhesive, popping can occur as the adhesive dries and pulls the plasterboard closer to the framing substrate. Ensure fasteners are fixed a minimum of 200mm from a daub of adhesive.

INSERT CONTROL JOINTS: This is particularly important with large open plan rooms or where corridors enter a large space. As best practice, control joints should be designed and installed wherever there is a risk of structural movement (e.g. large rooms, long walls, entry to large rooms and mid-floor level in stairways). Refer to the GIB® Site Guide for specific recommendations.

METAL PERIMETER CHANNEL WITH SQUARE STOPPING FOR WALL/CEILING JUNCTION:

Where you intend to square stop the wall /ceiling junction, design to replace any nominal 140mm ribbon plate with a conventional 90mm ribbon/top plate so that either a GIB® Rondo® 340 channel or GIB® Rondo® NZ18 angle can be fitted to the perimeter. This means the perimeter screws are penetrated into the steel, not the timber. Alternatively, GIB-Cove® will generally cover these at-risk fasteners.



ALLOW ADEQUATE DRYING TIME: Adequate drying time is important for your timber structure. Ensure your winter construction programme accounts for sufficient time for framing to adequately dry steadily and evenly once the building is closed in. While you can't beat natural airflow, colder months may require the use of artificial heating. LPG burners emit water as a by-product of combustion. This is detrimental to drying of a structure. Where possible use other liquid fuel burners, or electric heaters. The important consideration is that plasterboard linings should only be installed when the moisture in the timber framing is less than 18% (or lower if air conditioning, heat pumps or central heating are to be installed).

REPAIRING

Popping that occurs after at least one month's heating cycle is likely caused by timber shrinkage. Because further shrinkage is likely to occur and popping reappears, do not repair until the end of a heating season.

- A screw should be reapplied 50mm from the popped fastener.
- Drive in a new fastener whilst applying firm pressure to ensure firm contact with framing.
- Use a nail punch to seat the popped fastener beneath the surface of the plasterboard.
- Remove loose compound and paper.
- Apply two coats of taping compound followed by a topping coat, then redecorate.

WILL POPPING RECUR?

If timber has endured a full heating season post occupation, the chances are that the timber may have reached its equilibrium moisture content and has stabilised. Seasonal fluctuations in moisture content are unlikely to cause future fastener pops.

FURTHER INFORMATION

The GIB® Technical Helpline is available weekdays during business hours on 0800 100 442 for further information and related queries. The GIB® Site Guide and relevant technical systems literature includes best practice installation guidelines to help you install plasterboard systems correctly, first time.

