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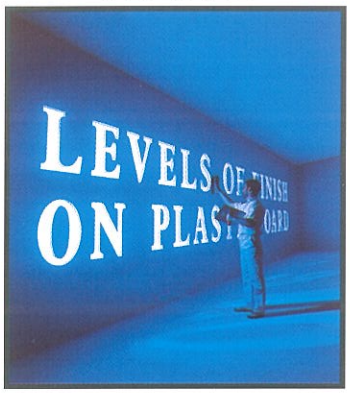


PLASTERBOARD EXPECTATIONS

PROBLEMS - CAUSES AND CURES

Tests at Monash University by pasterboard manufacturers and HIA confirm peaking occurs for a variety of reasons, some of which are beyond the control of the builder or subcontractor. It generally occurs when there are increases in temperature and changes in relative humidity, which cause dimensional changes in materials.

Where timber frame construction is involved, shrinkage occurs as the timber dries. It is possible for "kiln dried" timber to shrink, bow and twist causing the plasterboard in a partition or ceiling to be put under stress, either in compression or in tension, depending on the temperature or humidity conditions. These stresses are relieved when the plasterboard bends away from the joint. Once this bending takes place, the system takes a set and very rarely returns to normal. It can become progressively worse with each change of temperature or humidity. Thus deformation appears as a continuous ridge along the length of the joint, with a uniform fine, peak like shape at the centre.

PEAKING

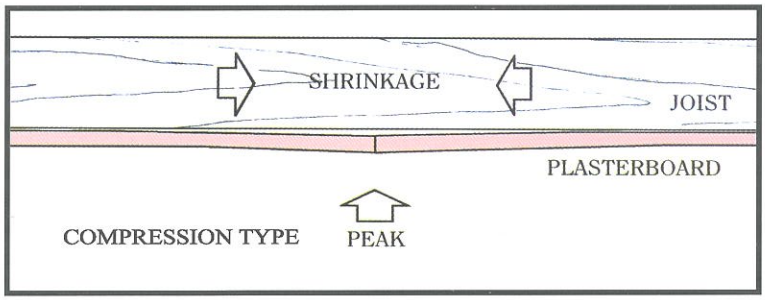
Peaking is a universal problem, which can only be limited by ensuring correct moisture content of substrates, good ventilation and strict accordance with manufacturer's fixing instructions.

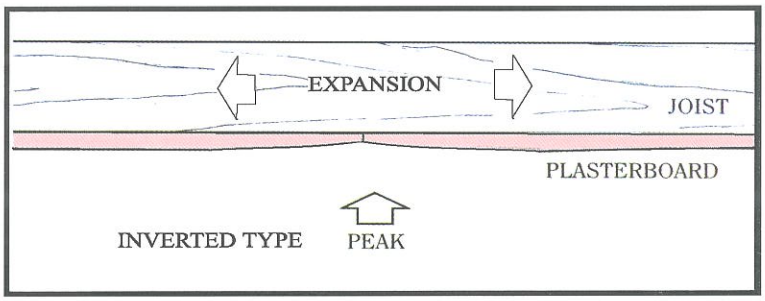
Peaking may only become apparent after the house has been painted, particularly with gloss or semigloss paints.

For best practice backblocking of joints is recommended to reduce the likelihood of peaking.

POTENTIAL CAUSES OF PEAKING

Peaking may occur some time after construction is completed. Peaking presents itself as a quite pronounced sharp V, either V or V and should not be confused with visible joints caused by glancing light.





Compression Peaking

The critical period for compression type peaking is during the spring months and especially when there has been an extremely wet period followed by a sudden rise in temperature. This may cause timber to contract resulting in the plasterboard moving in a downward direction forming a linear V shape.

Inverted Peaking

The critical period for inverted peaking is in the winter months, as low temperatures combined with damp humid conditions may cause timber to expand. The consequence of this is the plasterboard will invert or move in an upward direction forming an inverted V shape. Under extreme conditions cracking may occur.

Incorrect spacing.

A 10mm space is essential to allow for settling or shrinkage of the wall plates and studs. This prevents pressure being put on the base of the sheets, which in turn transfers tension to the joints.

Expansion or Control Joints

It is essential that adequate expansion or control joints are provided where required.

Ventilation

Adequate ventilation to areas with concrete floor slabs is required to prevent released water vapour from diffusing to roof structures and causing moisture movement in timber. For example problems may occur if buildings are left closed and unoccupied without ventilation for prolonged periods immediately after completion.

REPAIRING PEAKS

In all cases of peaking, it is essential that the area be left as long as possible, so that it reaches its equilibrium condition, before undertaking remedial work.

<> Smooth peak down to reinforcing tape without cutting through the tape. Fill areas either side of the peak with a light coat of compound. Leave to dry, then trowel another thin film of compound over the entire area.

<> Examine the area. Additional coating of compound may be required. Peaking may recur, but is usually less severe.

<> Gloss or semi-gloss paint will highlight surface irregularities, particularly under the influence of glancing light.

BEST PRACTICES

The following steps summarise how to reduce the incidence of peaking.

<> Straighten any bowed or twisted framing timber. Pack, plane or replace as required.

<> Plasterboard manufacturers recommend the use of height adjustable metal furring systems on roof trusses.

<> Allow adequate time between layers of Jointing Compound. These can be either an air drying or setting type material specifically formulated for use on plasterboard. Each coat of air drying joint compound must be completely dry prior to the application of any following coats (approx. 24 hours). Allow "setting" type compounds to fully harden prior to the application of following coats.

<> If there are gaps of 3mm or more between sheets, stop these gaps with setting type compound and allow to dry before applying the normal layers of jointing compound.
Provide adequate ventilation within the house as the compounds dry, particularly if a concrete floor slab is used.

<> Provide a 10mm gap at the base of walls to allow for any shrinkage of framing members.

FASTENER POPPING

A nail or screw pop is a protrusion of the fastener or the compound covering the fastener through the surface of the plasterboard.
Fastener popping may occur with any type of material secured to timber with fasteners.

CAUSES OF FASTENER POPPING

- Timber shrinkage and/or twisting
- Improper application procedures

It may not be possible to check the actual moisture content, but using timber that has been stored under cover or using kiln-dried timber is best. Manufacturers recommend a timber moisture content not exceeding 16% maximum (range 12% - 16% in NZ) prior to lining. Using premium grade timber rather than poorer grades, which are more susceptible to movement, is also good practice.

Best practice is the use of the fastener and adhesive system.

Whenever the back of the plasterboard is not held tight and secure against the face of the framing member by the head of the fastener, a potential fastener pop exists. Figure 1 shows plasterboard held tight and secure against the framing member. Figure 2 shows a fastener pop as a result of moisture movement in timber. Figure 3 shows the board not held tight and secure against the framing.

FIXING THROUGH ADHESIVE

If fasteners are applied through adhesive a pop can occur as the adhesive dries and pulls the board closer to the framing member.

Ensure fasteners are fixed a minimum of 200 mm from adhesive.

REPAIRING FASTENER POPS

When to Repair?

Fastener pops that occur before or during decoration can be repaired immediately.

Moisture movement in timber, is the likely cause of fastener pops occurring after decoration.

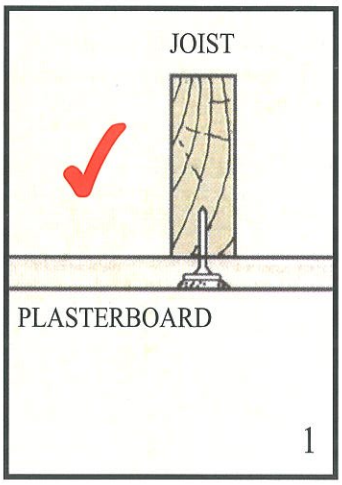
Do not repair until the timber has stabilised, ie. reached an equilibrium.

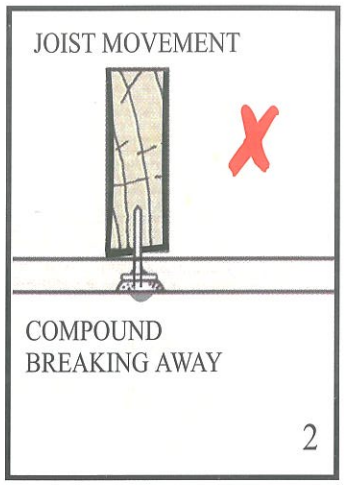
How to Repair?

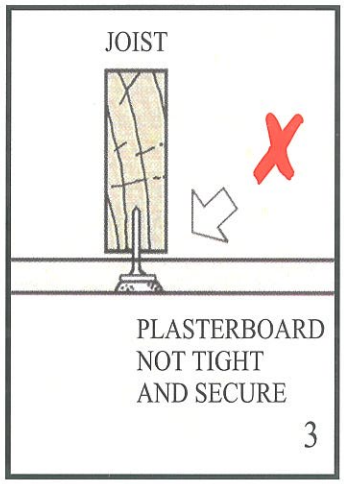
An appropriate fastener should be fixed about 50 mm from the popped fastener applying sufficient pressure against the plasterboard to assure firm contact with the framing. Remove loose compound, apply new compound as required.

Will Pops Recur?

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







RADIANT HEATING

Another problem which can affect plasterboard is the use of radiant heating elements on the upper surface of the ceiling panel.
At best this is a highly inefficient and costly heating method.
At worst the heat necessary to provide a functional heating effect can damage the plaster core and under these circumstances the plasterboard manufacturer's warranty would be at risk. In NZ there is no warranty for the plasterboard where radiant heating ceiling systems are installed.
The best solution is to use an alternative heating system.