Ceiling Batten Centres for Gypsum Plasterboard

Issue Date October 2025

This bulletin aims to provide you with information to construct a ceiling in accordance with agreed industry standards and to achieve a high quality of finish that meets/exceeds customer expectation.

When spanning between ceiling framing supports, the law of physics dictates that materials deflect under their own weight and any additional applied forces. In the case of ceiling linings this means that;

- The further the span the greater the sag
- The thinner the material the greater the sag
- The heavier the applied forces (e.g. self-weight, wind, insulation, services and/or downlights) the greater the sag

However, there are no NZ Building Code requirements relating to sag performance of ceiling linings.

AS/NZS 2589:2017

Australian/New Zealand Standard AS/NZS 2589:2017 "Gypsum linings - Application and Finishing" states:

3.5.2.1 Framing spacing

"The spacing of framing members directly supporting gypsum linings shall be not greater than 600mm centres for all thicknesses of gypsum linings. In the case of ceilings, spacing for framing members on 10mm standard grade gypsum plasterboard shall not exceed 450mm centres"

The standard does provide some 'guidance' on serviceability deflection limits to prevent detrimental visual/sensory effects and cracking in ceilings. However, these limits are not directly related to the quality of finish as perceived under critical lighting conditions, such as shadowing or surface irregularities. Instead, the focus is on excessive sagging, which can cause discomfort or unease for occupants due to noticeable ceiling deflection.

AS/NZS 2589:2017 is an industry Standard that;

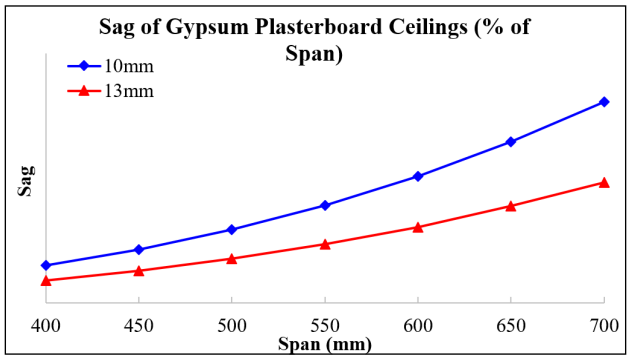
- Sets bare minimum requirements for gypsum lining systems, materials and installation practices.
- Is agreed and promoted by responsible gypsum plasterboard manufacturers and users.
- Serves to provide consistent plasterboard application and finishing.
- Includes recommendations for Levels of Finish to support delivery of finish quality expectations.
- Aims to protect the building owner and occupant against disappointment associated with finish blemishes.

Although the Standard is not mandatory, Winstone Wallboards strongly support its adoption and use.

THE EFFECT OF SPAN

Deflection does not increase in direct proportion to span. **For any gypsum plasterboard, the sag when spanning 600mm is about 2-3 times the sag for a 450mm span.** Temperature and humidity at the time of lining can also significantly affect the stiffness of gypsum plasterboard and how it deflects under self-weight along with any additional weights such as those imposed by services, insulation, down-lights, etc. **Given the wet and humid conditions prevalent across many parts of New Zealand, ceiling sag can be amplified.**

The following graph shows how sag increases exponentially, for any given plasterboard type, as framing centres get wider.



Achieving higher level of finish, such as Level 4 or Level 5 as defined in AS/NZS 2589:2017 requires strict control over ceiling deflection. Extensive testing on plasterboard ceilings by Winstone Wallboards has shown that a mid-span sag in a ceiling lining as small as 1/2mm can become visible under critical lighting conditions, compromising the appearance of smooth, high-quality finishes.

WINSTONE WALLBOARDS RECOMMENDATIONS

To limit sag, loads on GIB® plasterboard ceilings must not exceed an insulation weight of 4.2kg/m2, and a fixture weight of 1kg or more unless they are independently supported. The placement of ceiling fixtures such as light fittings are to be limited to one fixture per m2 unless independently supported.

To have the best chance of meeting the increasingly high quality of finish expectations of commercial and residential building owners and to help avoid time-consuming and costly call-backs.

Winstone Wallboards recommends

- Ceiling framing support centres no greater than 450mm for 10mm GIB® plasterboard and no greater than 600mm centres for 13mm or thicker GIB® plasterboard.
- The use of 13mm GIB® plasterboard in ceiling applications for optimal performance.
- Installing ceiling battens after the roof framing is complete and roof has been loaded.
- Fixing GIB® plasterboard at right angles to the ceiling framing.
- Use of GIB® Rondo® metal ceiling battens.