

FAILING TOLERANCES AND TRIP HAZARDS: A GUIDE TO TILE SELECTION TO ENSURE AS3958.1 COMPLIANCE



One of the most underestimated issues with tiles is bowing or lipping. Not only do “bowy” tiles look aesthetically unpleasant, but they can also cause a tripping hazard. Often it happens that installations do not comply with Australian Standards AS3958.1 and tiles must be removed and relaid, or they pass unnoticed until someone trips over and you get a claim. Let us talk about it.

WHAT IS BOWING?

Bowing happens in factories that are trying to save cost. Usually, it happens during the firing stage of the production process. Factories are pushing and rushing tiles through by reducing the time in the kiln, which results in tiles not being “baked” properly. Use of inferior raw material is also a major contributing factor and again it is price driven.

Cut-to-size tiles, which are cut from a larger format and make up the majority of tiles supplied in the Australian market are another major contributing factor. You can recognise these tiles by not being “true to size” (ie a tile marketed as

600x1200mm will be smaller 595x1195mm) and have a saw/cut marks and usually a small bevelled edge. Cutting tiles to size can add extra bowing to the tile. Tiles are pressed with enormous amounts of pressure, as the tile is cut this pressure or tension in the tile is released, allowing the tile to deform or deflect along different planes, this often end up in a curve along the long edge of the cut tile. Think about timber looking tiles, they have a very high tendency of bowing if you take a closer look. Again, usually these tiles are cut from a larger format due to economic reasons.



WHY IS BOWING IMPORTANT?

First of all, as mentioned, bowy tiles look bad, unless you want your installation to look like that.

Second, by having a bow, it tells you a lot about general quality of those tiles.

Third, your tiler is going to hate you. Installation costs and wastage may increase and not only, installing bowy tiles is annoying and time consuming, but it comes down to probably most important aspect which is safety and compliance.

Fourth, your bowy tiles when installed, have a high chance of failing Australian Standards, let us explain why.



Bowy tiles surfaces

WHY DO BOWY TILES HAVE A HIGH CHANCE OF FAILING AUSTRALIAN STANDARDS?

Well, Australian Standards 3968.1 clause 5.4.6 (a) mention that “the lippage for joint widths of 3.0mm or less should not exceed 1.0mm.” While International Standards ISO13006 for bowing allows 2mm difference for the same tile. One tile being concave and the other convex, it can result into height difference of 4mm. Even when you buy or specify tiles that do pass International Standards, they might still not be good enough.

Have a look at the picture above, this is installed in a landmark building of Sydney, a high traffic area. Very unlikely that this would pass Australian Standards of 1mm height difference. So, if someone trips over this, someone is going to be liable for that.

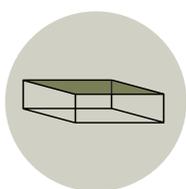


Bowy tiles in a landmark building of Sydney

HOW TO SPECIFY TILES WITHOUT BOWING?

There are few tricks to assess the tiles, but to be sure, ask for manufacturers technical test reports or their standards. For “Surface Flatness” you can assess their quality level, if the answer is just “pass” or “complies” it should raise red flags. At Kaolin our tolerances are a lot stricter. Our maximum allowance for surface flatness on our 900x1800 tiles is only 0.02% variation or 0.3mm. This means it is a lot easier for your tiler to achieve that perfectly flat floor with no lipping or high edges to

trip on or catch dirt. While other manufacturers recommend laying their tiles with minimum 1.5mm grout joints and no more than 1/3 offset to try to hide any shortcomings in their manufacturing, we are so confident in our tiles flatness that we allow grout joints down to 0.5mm when laying stack bond and even recommend bricklaying or a 50% offset with joints as small as 1.5mm.



Test Description	International Standard ISO13006	Kaolin Tiles Specifications
Surface Flatness	Convexity ≤ 2.0mm Concave ≤ 2.0mm	Convexity 0.4mm Concave 0.3mm

Other easy tricks to at least get an idea of the quality, is by putting tiles from the same manufacturer face to face, like in this picture, and you will be able to see the level of bowing they might show. Or, in good case scenario, like with 2 of our tiles, no bowing whatsoever.

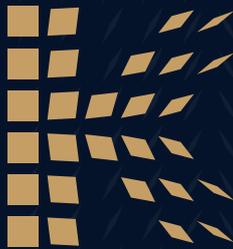
Be aware of the consequences of purchasing poor quality products, or like in a Russian saying: “a stingy man, pays twice.”



International Standards
±2mm



Kaolin Standard
±0.3mm



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