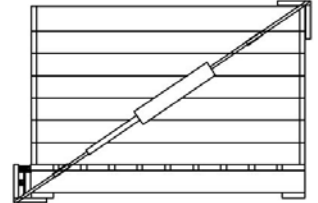


Testing bulk potato storage boxes - steps to achieve BS 7611 rating

There is no shortcut to achieve the tough performance requirements of BS 7611. Manufacturers should have designs load tested to BS 7611: *Potato storage boxes for mechanical handling* before stenciling boxes with the BS Class 4, 6 or 8 marks. Boxes without test evidence available to the manufacturer are liable to be challenged by the HSE Inspectorate or UK Trading Standards officers. The BSI has no part in official marking other than setting the rules for testing and marking in BS 7611, for more on this see our newly revised 34 Series Datasheet *Ensuring wood packaging quality*. To avoid abortive tests we plan things in two stages. The first is loose nail testing and desk assessment from a manufacturer's sketch plus list of components which eliminates those factors in the design that we can usually tell will cause early test failure, such as use of a corner assembly that will not resist the top load test-compression on each corner post of 4000 kg. When we complete that the manufacturer submits a single (usually modified design) box for full load testing to BS 7611. The steps are -



1. Manufacturer establishes customer requirements as to height of box, stack height eg. BS Class 4, 6 or 8, box length and width (permitted lengths widths and heights are listed in BS 7611). Although customer preference will dictate box ventilation and whether a proposed design has slatted or closed sides or ends, note slatting has a reducing effect on test results. Customer preference will dictate whether nailplated sawn, plywood or all-sawn with diagonal bracing.

2. Manufacturer prepares a list of components including a sketch. If nailplates are used, a hydraulic press of at least 10 tonne thrust is essential to drive in a full size nailplate. Each box manufacturer's method of applying the plate, the plate size, and plate make all vary, so the full scale BS 7611 Diagonal Load tests give a lot of information (the End diagonal Test is shown above). The board thickness for long sides is critical, but width is optional above 90mm, if modification to meet the BS is needed, we estimate the changes needed. Details sent to PalletLink should include:

- Box plan size, height, type, eg. 1830 x 1220mm, slatted ends, closed sides (height restricted by the BS)
- Detail of the jointing eg. posts to sides, shape of posts (rectangular or aris), gaps in base boards etc.
- Detail of the nailplates eg. maker, gauge/thickness, length x width, total per side/end, surface or concealed
- Sizes and thicknesses of side and end boarding, deckboards, posts, species of wood, eg. Baltic redwood
- Quality of wood, eg. fresh sawn or kiln-dried, largely clear of knots,
- Nail size & exact pattern, eg. 2 ring nails 60 x 3.5mm staggered 25mm centres per vertical post joint

3. Manufacturer submits the design to PalletLink for pre-test assessment (free to members). If you need help with design you can contact us or download a finished tested design from the PalletLink website. We have 2 very basic designs on the website, with more on file not drawn up in CAD from testing a range of designs. Any ring nail diameter of less than 3.4 mm will need to have *bend strength* stated by the maker (this is common in the USA) to avoid failing the BS 7611 requirements and we find nails vary a lot in strength. Bending strength tests to ISO 12777 are free to members. Using test results on your nails and our database of tested designs we assess your design for likely conformance to BS Class 4, 6 or 8, but note that does not include BS 7611 *Test C* (nailplate) results. We detail foreseeable failings such as side board thickness, gaps, nailplate size and nail-pattern for tests A, B and D.

4. The manufacturer then makes a single full size 1000 kg box prototype and sends it to us for testing to the full range of five BS 7611: *Potato storage boxes for mechanical handling* tests. If the prototype meets BS requirements it is fully specified in a PalletLink *Certificate of Conformity* issued to you in your Company name. In the event of failure, a report with detailed design advice in order to achieve success in a future test will be issued.

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