

Defective Scaffold Board



What happened

A bricklayer was walking from the inner birdcage onto the external top lift of scaffold at 8 metres above ground level. On stepping onto the inner most scaffold board of the external scaffold lift it snapped in half, fortunately the bricklayer managed to stop himself falling completely through the 225mm gap. He sustained bruising to his legs and knee and was treated for mild shock. One half of the board fell to the ground but within the scaffold structure.



Findings following investigation

The underside of scaffold board, had three large knots running along the width of the board (see photo below right). The knots, being larger than 50mm in diameter, would leave no more than 33% of the grained timber to provide the load bearing capacity of the board. BS2482 specifies that if the sum of the knot measurement on both faces exceeds 150mm, then the board shall be rejected. The board was 2000mm long, 225mm wide & 38mm thick.

Grey coloured splinters were apparent, which were coloured differently to the more recent lighter coloured splintered area. This suggested previous damage and weakening around the area of the knots. The line of knots on top of the board could not be seen clearly as the board was covered in a dry mortar mix. These wouldn't have been easily identifiable during routine inspection as the critical area was on the underside of the working platform.



Knots were clearly visible on the edges of the board and were cracked along the thickness of the board. There were gouged areas of timber along the length of the board on both sides. The board showed signs of abrasion along its entire length with cut marks indicating it had been caught by a rotating blade possibly by materials having been cut directly on the board. It was also noted that recent weather conditions (ice, snow and rain) may have affected the integrity of the board around the area of the knots despite allowable tolerances relating to moisture content.

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Lessons to be learn't

British Standard 2482:2009 covers the Specification for Timber Scaffold Boards. Paragraph 7.2.2.3c states "that the board shall be rejected if the sum of knot measurements on both faces exceeds 150mm". Despite other restrictions, for this reason alone the board should not have been used. Further to this, the end bands were not marked as specified in section 9 of BS 2482:2009 as follows:

- The number & year of the British Standard;
- The manufacturers identification mark;
- The letter M or V denoting machine or visible grading;
- The word "support" & the target span in metres up to which the board must be supported.

Preventative actions

1. All scaffold boards are to be thoroughly inspected by the scaffolding contractor who erected the scaffold to comply with the specification as detailed in British Standard 2482:2009 ASAP
2. Boards are not to be used as part of a working platform if they are damaged, cracked or have notches cut out of them. Site management are to record findings & ensure suspect boards are replaced;
3. Trades likely to use power tools, specifically abrasive wheels, on scaffold are instructed to use sacrificial timber & not to cut directly onto scaffold boards.

For further information refer to NASC Technically Speaking Issue No.7, shown on the following page.

The NASC were first made aware of this issue via a Safety Alert from GallifordTry Plc. Received February 2010.

Published by the NASC (National Access & Scaffolding Confederation) 17/02/2010

TECHNICALLY SPEAKING

ISSUE No 7

Do your scaffold boards make the grade?

Scaffold board failures, and in particular the failure of Grade A boards, although thankfully rare can have serious and possibly fatal consequences.

The variety of grading methods for boards is so wide that choosing a board is now unnecessarily complicated. Only about 30 per cent of boards bought today are made in accordance with BS2482, the British Standard for graded scaffold boards. NASC boards are a visual grade to a 1.5m support span, others are graded to trade specifications and/or grouped under the Grade A specification, or 1.2 m support span.

Grade A boards are principally to the manufacturer's specification and this is an area where the quality can vary widely as there are no universally accepted grade 'A' visual or machine grading rules!

In most cases the boards perform, but not always and as part of an ongoing review of British Standards, John Brash together with three other scaffold board manufacturers recently took part in a research project backed by the HSE to review board standards. These results have gone forward to be used to re-write BS2482:1981, Specification for Timber Scaffold Boards, with a separate part now being issued for 38 thick boards only (grading rules for both 1.2m and 1.5m spans). This part will be available for public comment later this year.

One of the main findings of the research was that flatwise modulus of elasticity, the parameter measured by strength grading machines, was far more accurate and consistent in predicting bending strength than any of the visual defect measures.

A scaffold board is an engineered product and should be purchased as such. If a contractor uses Grade A boards he must ensure they are from a principled manufacturer who

can demonstrate a clearly defined method of production within a quality assurance system and employs qualified scaffold board graders.

The most reliable and consistently high performing board is a machine stress graded board to BS2482.

This checklist may be useful when purchasing boards:

- Are your scaffold boards graded to a clearly defined set of rules?
- Are your boards graded by fully trained and independently assessed graders?
- Are your boards manufactured within an ISO 9001:2000 quality assurance scheme?
- Do your boards meet a known performance standard?

... And if any one of these questions cannot be answered satisfactorily

- Am I confident in using boards manufactured by this company?

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