

Experts' reports prove the longevity

Assyx is one of the most important suppliers of production boards for the concrete products industry and Assyx DuroBoard production boards are used in concrete plants worldwide. The fact that the DuroBoards are not only convincing in terms of production, but also score points due to their longevity, was recently demonstrated by the assessment of sample boards that have already been in use for many years. The Icelandic company Steypustödin, which has been producing with DuroBoards since April 2007, and the Alkern company, which has been using DuroBoards since June 2011, provided Assyx with random production boards for their assessment.

The Assyx DuroBoard consists of an LVL veneer-laminated wood core with general building authority approval. This means that the manufacturing process is regularly checked and thus guarantees very high and consistent quality. The wood blanks are sawn out of endlessly produced long, strongly pressed veneer-laminated wood boards, the so-called cakes. This leads to a high homogeneous vibration transmission, evenly distributed over the entire production board.

The wood core is protected by a 3 mm-thick airtight and watertight polyurethane coating of the Baydur® brand. The complete waterproof coating predestines the Assyx DuroBoard for use in very humid and wet conditions without influencing its properties.

Assessment of sample boards from Steypustödin

On 15 April 2019, Steypustödin delivered five production boards measuring 1,400 x 1,100 x 55 mm to Assyx for assessment.

The boards were originally ordered with a total quantity of 1,250 pieces and delivered to Steypustödin in April 2007. This is an Assyx DuroBoard of the first generation. The wood core consists of LVL veneer-laminated wood from Brazilian pine.

The boards were delivered unpacked on a Euro pallet. After opening the straps, the boards were individually removed from the pallet and visually inspected.

The surface of the boards was dirty, as is usual in the concrete block industry after 12 years of using a production board.

Concrete blocks in various formats and partly using release agents were produced on production boards on an AMEthst 1300 production machine from AME. The production weight per layer was up to 360 kg. According to Steypustödin, approx. 150 cycles were carried out per board last year, which corresponds to 1,800 production cycles over the service life to date. Neither the surface nor the side surfaces of the five production boards showed any extensive damage.

In the first step, three of the five boards were weighed, after which the deflection under load and the thickness of the boards were measured in the as-delivered condition. The boards were then cleansed of coarse dirt deposits in a belt grinding machine. Afterwards, the thickness was measured again at the previous measuring points.

In order to be able to measure the wear of the boards over the entire surface, they were sawn into three parts and then measured.

Finally, the Shore hardness and the wood moisture were determined and the bonding of the PU with the wood surface was investigated. Two pieces of wood (without plastic adhesives) were sawn into rectangular blocks from the board to determine the density of the wood.

The weight of the three boards was between 60 and 63 kg, on average 62 kg. Assyx states the weight of a new DuroBoard in this size to be 61 kg.

Determination of modulus of elasticity

The individual boards were underlaid with strips in the lower edge area to simulate transport in a production plant and then loaded with a weight of 780 kg on the surface. The deflection was measured under load and the resulting modulus of elasticity calculated.

From the determined deflection of the boards, a modulus of elasticity of well over 10,000 N/mm² is calculated. This value corresponds to the value of a board in the delivery state. Assyx guarantees its customers a modulus of elasticity of >10,000 N/mm. It can therefore be concluded that the production boards assessed have not lost any of their mechanical load capacity during their use so far and can continue to be used in production.

Wood moisture

The wood moisture was measured at several points on the three boards. The result of the measurements for all boards is between 11% and 14%. Technically dried wood is about 8-12% immediately after drying. Due to the wood equilibrium moisture this can settle down to values of 18%. The measured values of up to 14% are absolutely within the normal range.

Shore hardness

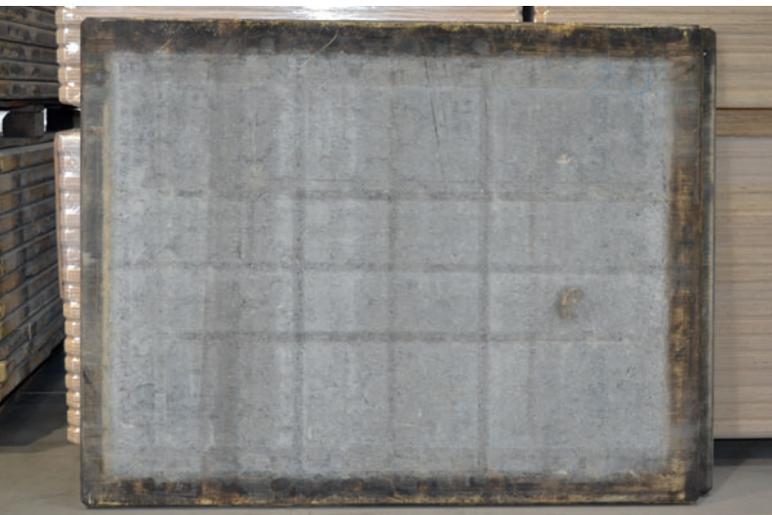
The determined Shore hardness (A) is approx. 68 at different measuring points and distributed over all three boards. This corresponds to the value of a new board.

The plastic is firmly attached to the wood core and completely surrounds it. The plastic surface can only be detached from



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One of the sample boards from Steypustödin before cleaning...



... and after cleaning

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Sawn boards for determining the thickness in the middle of the board; completely closed coating of the wood core with the plastic material

the wood by force and with the help of a chisel. Wood sticks to the plastic and the wood fibres tear off on deeper layers. The wood and plastic are bonded together over the entire surface.

A wood block of 134.3 x 73.9 x 43.7 mm sawn from the board weighs approx. 280 g, which corresponds to a wood density of 645 kg/m and is therefore in the range of a well-dried LVL pinewood. As a result, the PU coating was completely closed and no water penetrated the board.

Summary

The five sample boards delivered were in perfect condition at the time of the investigation. The plastic surface was completely intact and the dimensional accuracy of the boards corresponded to the delivery state. On the basis of the results of



The photo shows the detached plastic coating and the wooden core.



The photo shows a cross section through the board, clearly visible is the still completely intact bonding of the individual veneer layers to each other.

the investigation, it can be concluded that the production boards continue to be suitable for the production of highly dimensionally accurate concrete block products and can also be used for a longer period of time.

Measurements on sample boards from Alkern Meximieux

On 12 February 2019, three production boards measuring 1,400 x 1,300 x 50 mm were also delivered to Assyx by Alkern for assessment.

The boards were ordered on 20/12/2010 with a total quantity of 4,650 pieces and delivered to Alkern in June 2011. The raw board comes from the Finnforest company (today Metsä Wood) (size: 1,392 x 1,292 x 44 mm). This is a load-bearing and dimensionally stable veneer-laminated wood board



One of the sample boards from Alkern after cleaning



Sawn boards for determining the thickness in the middle of the board



Complete closed coating of the wood core with plastic

(designation Kerto® LVL Q-panel), which has a general building authority approval (abZ) in Germany.

The surface of the boards was also dirty, as is usual in the concrete block industry after 7 to 8 years of using a production board. Due to the contamination, it can be assumed that release agents were used during production. Neither the surface nor the sides of the three boards showed any visible damage. No information is available about the number of cycles in the production plant, nor is it known which products were manufactured on the board.

The production boards were then examined as previously described for the Steypustödin boards.

The weight of the three boards was between 51.8 and 53 kg, on average 52.6 kg.

Assyx states the weight of a new DuroBoard in this size to be 52.98 kg.

Determination of modulus of elasticity

The determination of the modulus of elasticity was analogous to the boards from Steypustödin.

From the determined deflection of the boards a modulus of elasticity of approx. 10,000 N/mm² is calculated, i.e. also here the value of a board in the delivery state. It can therefore be concluded that the mechanical load capacity of DuroBoards from Alkern too has not been compromised during their use so far and that they can continue to be used in production.

Wood moisture

The wood moisture was measured at several points on the three boards. The result of the measurements for all boards is approx. 15% and thus absolutely within the normal range.

Shore hardness

The determined (A) is 68 at different measuring points and distributed over all three boards. This corresponds to the value of a new board.

A wood block of 100 x 79.9 x 43.85 mm sawn from the board weighs approx. 165 g, which corresponds to a wood density of 471 kg/m³ and is therefore also in the range of a well-dried LVL pinewood. This shows that the PU coating was completely closed in the case of Alkern boards too and no water had penetrated the board.

The plastic is firmly attached to the wood core and completely surrounds it. The plastic surface can only be detached from the wood by force and with the help of a chisel. Wood sticks to the plastic and the wood fibres tear off on deeper layers. The wood and plastic are bonded together over the entire surface.



The photo shows the detached plastic coating and the wooden core.

Summary

The three sample boards delivered here were in perfect condition at the time of the investigation. The plastic surface was completely intact and the dimensional accuracy of the boards corresponded to the delivery state. On the basis of the results of the investigation, it can be concluded that the production boards continue to be suitable for the production of highly dimensionally accurate concrete block products and can also be used for a longer period of time.

FURTHER INFORMATION



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