



Karditsa, Greece / 14th July 2017

Department of Wood & Furniture Design and Technology

Technological Education Institute (TEI) of Thessaly – *a Greek higher education institution*

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URL (Google Scholar): <https://scholar.google.pt/citations?user=rFT6H-wAAAAJ&hl=en>

Technical cases (2004-2017): <http://users.teilar.gr/~mantanis/technical-projects.htm>

To Whom It May Concern

TECHNICAL REPORT

1. Introduction

As a wood expert in the area of wood technology for more than 20 years, I have undertaken several cases in which, companies or individuals, were in dispute for matters relating to wooden articles or products used in several applications. Hence, I do write this report, after I was called up by the Greek company [REDACTED] (Athens, Greece), which previously I did not know of, in order to assess the quality of perforated acoustic wood panels, and consequently to conclude in a technical finding.

For that, I visited in person that company on the 5th of July 2017, and examined thoroughly samples of acoustic panels which were shown to me by representatives of [REDACTED]. As a matter of fact, I inspected two acoustic panels ([photo 1](#)) which were composed of 16mm-thickness honeycomb panels, layered with steamed beech veneers. According to [REDACTED] claim, these were commercial products of [REDACTED], a company based in [REDACTED].

Technically, I describe the panels as suited for acoustic applications such as wall and roof coverings. I examined the two (2) panels, and I found out that they did have the following technical features:

- ✓ Acoustic panels with veneers of steamed beech (*Fagus sylvatica*).
- ✓ Panels composed of 16mm honeycomb, having particleboard frame all around
- ✓ Particleboard of fire-resistant (FR) grade, with a reddish colour, as inlay-frame
- ✓ Acoustic panels having a thickness of ~18.30 mm
- ✓ Micro perforated panels; having small holes (approx. 300,000/m²) in the surface
- ✓ Front and back sides having an FR layer; backside with a black acoustical fleece
- ✓ The black acoustical fleece is a fire-protected material
- ✓ Without any lacquer
- ✓ Panels not sanded
- ✓ Panels with no edge banding

I collected small samples ([photo 2](#)) from the two acoustic panels which I brought them at my lab, *Laboratory of Wood Science and Technology* in Karditsa city, Greece (TEI of Thessaly) to further examine, and investigate them macroscopically.



Photo 1. Photography of one acoustic panel examined on site by Dr. G. Mantanis
(photo taken by Dr. George I. Mantanis)



Photo 2. Photography of the small panel samples collected by Dr. G. Mantanis
(photo taken by Dr. George I. Mantanis)

In addition, representatives of [REDACTED] handed out to me several photographs (see photos 3-6) that were taken by [REDACTED], production manager of [REDACTED] in the dates 12/01/17 and 01/02/17), as received directly from the producing company [REDACTED]. The photographs showed several defects that occurred in the panels.

2. Findings

My findings from the examination of the acoustic panels, as done on site at the company, is that at least 5 or 6 local 'swollen surfaces' existed upon the panels (see photos 7-8). By my hands, it was apparent that veneers locally had been risen up (during the shipping); 'pop-ups' were at least 3 or 4 mm in height (photo 8). The situation was the same in both panels. Such defects **mostly** happened in the *connection area* between honeycomb and particleboard frame, and **deteriorated significantly the quality of the acoustic panels**. This finding was verified by my personal examination taken place at TEI of Thessaly, in Karditsa (photos 7 & 8), on 14/07/2017.

From the photos no. 3-6 ([REDACTED]), which were sent to me by e-mail, one can see several defects e.g., *uprising parts, channels, delaminations*, that occurred in the acoustic panels. From photos 5 and 6, it may be concluded that inappropriate gluing of the beech veneers to the particleboard substrate has resulted in some partial or full delamination (photo 6a), a serious defect.

It is obvious that all such defects have deteriorated the quality of the acoustic panels. Herein, I underline the strong complaints of [REDACTED], which I have no reason to doubt.

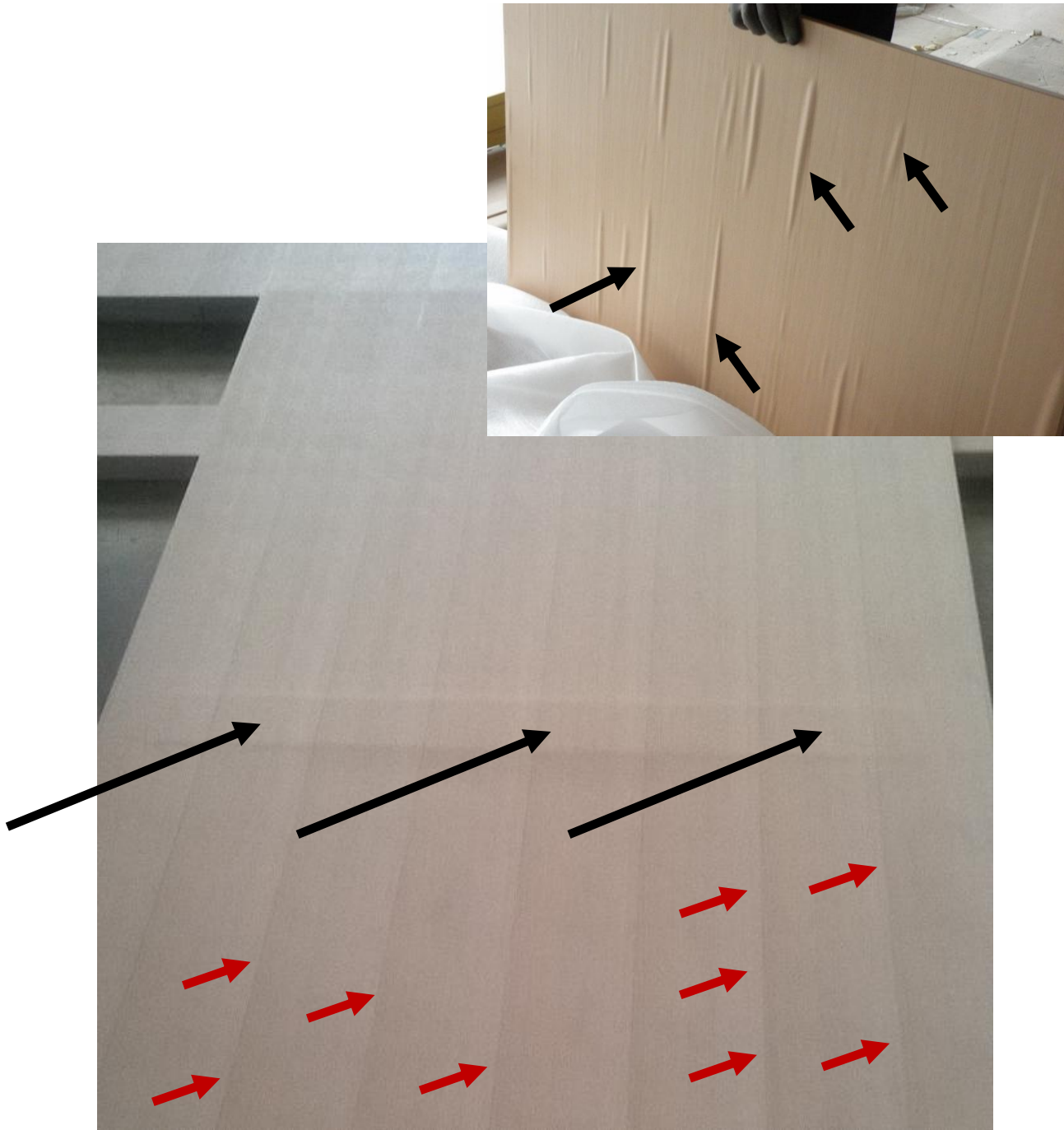
3. Conclusions

Acoustic panels are very expensive and *niche* lignocellulosic products. In this case, my final conclusions are that **serious defects** have occurred in several acoustic panels, as prepared for the Greek company [REDACTED] (Athens), from the [REDACTED] company [REDACTED] based in town [REDACTED]

This conclusion is verified by my own observations which I made on site, as well as by the available photographs of the company [REDACTED]

Verifying & signing this technical report,

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Photos 3a – 3b (photos taken by Mr. [REDACTED])

In the photos, one can clearly see the 'swollen surfaces' occurred in acoustic panels.



Photo 4 (photo taken on 16th Jan. 2017 by [redacted])

In this photo, this acoustic panel has been undergone a 'channel defect' making it problematic for final use in high-quality wall covering.

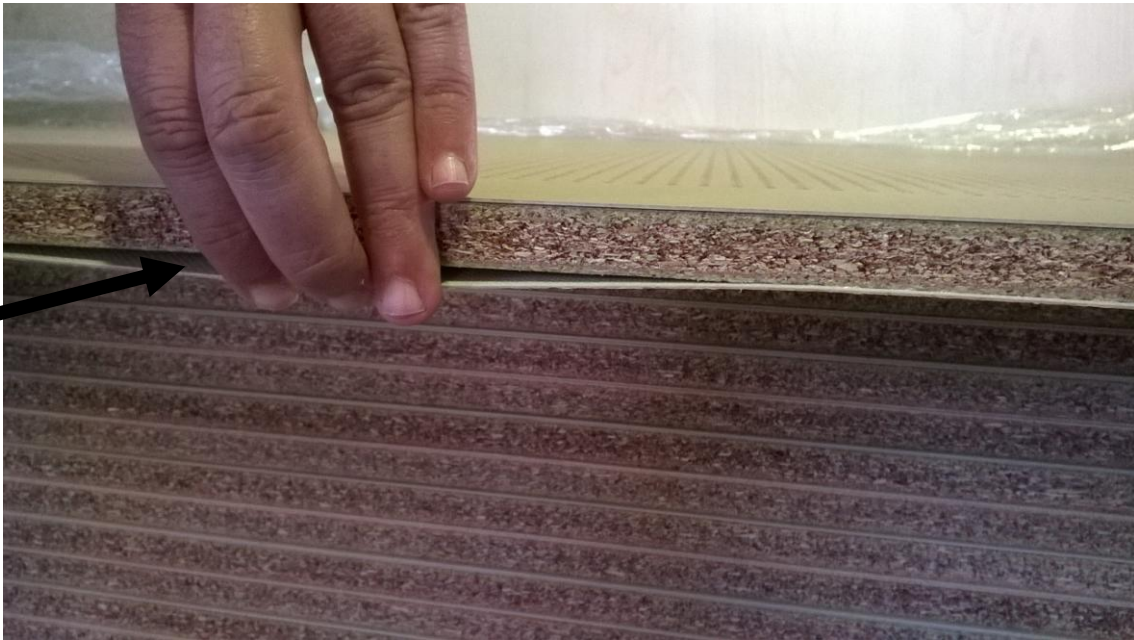
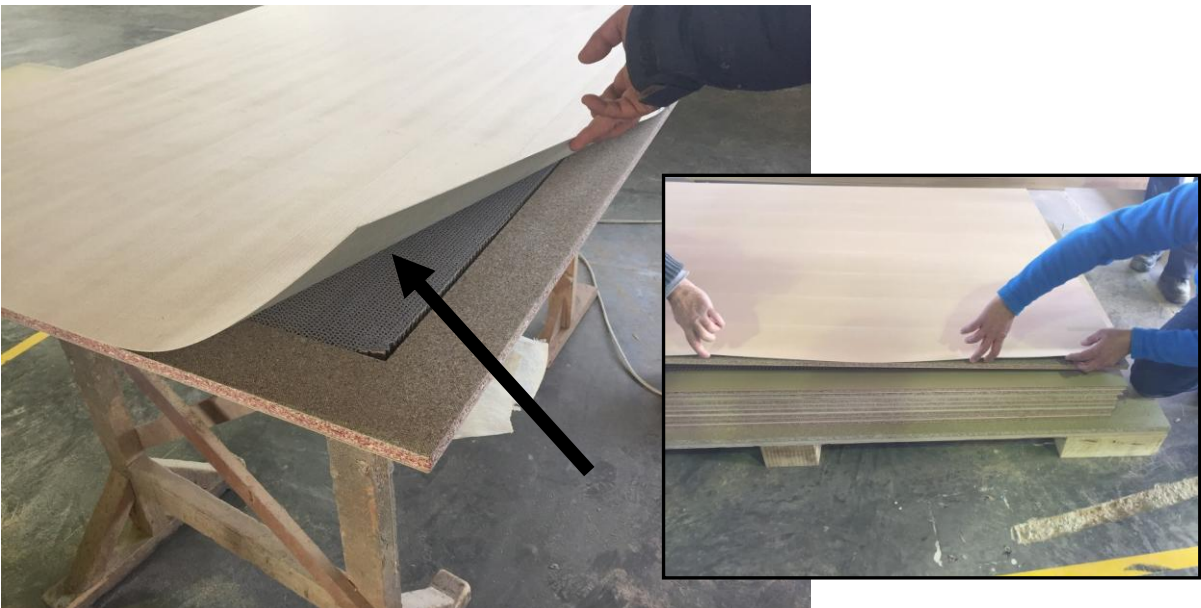


Photo 5 (photo taken on 01st Feb. 2017 by [REDACTED])

In this photo, as seen, a veneer glued to FR-board has been **partially delaminated**, a defect of delamination in such panel is a serious one.



Photos 6a - 6b (photos taken on 01st Feb. 2017 by [REDACTED])

Two other acoustic panels (as delivered in the 2nd batch) has been undergone a **full delamination** in the edges, possibly due to erroneous gluing.



Photos 7a – 7b (photos taken by Dr. George Mantanis at the TEI of Thessaly)
In the photos, it is very apparent the structural defects, right in the *connection areas*, that been taken place in the acoustic panels, i.e. defects very difficult to solve.

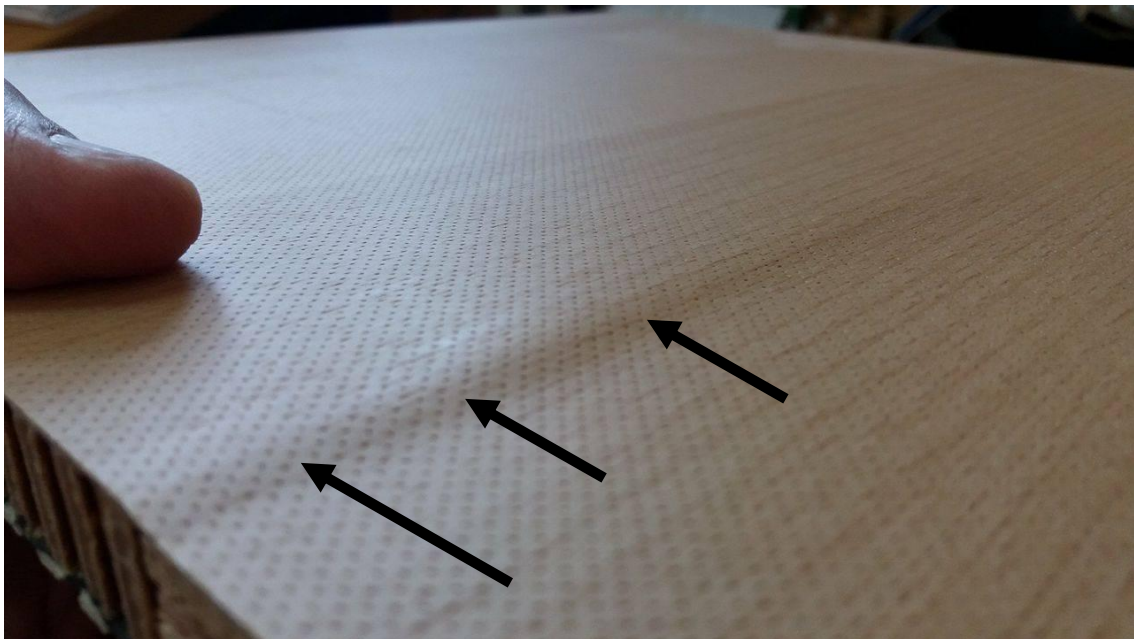


Photo 8 (photo taken by Dr. George Mantanis at the TEI of Thessaly)
In the photo, it can be seen the structural defects of local 'swollen surfaces' (like a 'layer') taken place in a acoustic panel.