

OPINION

On a dissertation for obtaining the educational and scientific degree "Doctor" in the field of higher education: 5. Technical Sciences, professional field: 5.13. General Engineering, scientific speciality: Technology, Mechanisation and Automation of the Woodworking and Furniture Industry

Author of dissertation: M.Sc. Eng. Rostislav Bijilov Bozhkov

Part-time doctoral student at the Department of "Furniture Production" at the University of Forestry (UF), Sofia, Bulgaria.

Dissertation Topic: Influence of Material Properties on the Softness of Upholstered Furniture

Reviewer: Prof. Dr. Eng. Veselin Stamenov Brezin,

University of Forestry, field of higher education: 6. Agricultural Sciences and Veterinary Medicine, professional field: 6.5. Forestry, scientific specialty: Technology, Mechanisation and Automation of the Woodworking and Furniture Industry, appointed as a member of the scientific jury by Order № 3ПЦ-228/23.04.2025 of the Rector of the UF.

1. Relevance of the problem.

The dissertation addresses a relevant and practically oriented issue related to the deformation behaviour of upholstery structures made of polyurethane foams and their influence on the perceived softness of upholstered furniture. The topic is highly significant in the context of modern furniture manufacturing.

2. Degree of knowledge of the state of the problem and creative interpretation of the literature review.

The doctoral student has studied 82 literature sources—25 in Cyrillic (including two standards) and 57 in Latin. The literature review spans 32 pages and effectively identifies key structural elements of upholstery systems. It reveals gaps in the study of material properties such as density, thickness, elasticity, and deformation, as well as criteria for their application.

3. Aim, objectives, hypotheses and research methods. Relevance of the chosen research methodology to the stated aim and objectives of the dissertation.

The dissertation's aim is clearly stated: to investigate the softness and deformation indicators of upholstery during the formation of the upholstered component of furniture structures. Five specific research objectives have been formulated, and six variants of spring systems in modern seating furniture were experimentally analysed. The selected methodology is appropriate and aligned with the objectives.

4. Visualisation and presentation of the results.

The dissertation comprises 52 pages of experimental results, presented with clarity through 42 figures and 16 tables, which effectively support the findings.

5. Discussion of results and literature used.

The results confirm the influence of material properties on the deformation behaviour of six types of upholstery structures. The literature is accurately cited, demonstrating the doctoral student's familiarity with contemporary research in the field. The multifactorial analysis of materials has practical potential for application in furniture production.

6. Contributions of the thesis.

As a result of the experimental and theoretical research conducted, the doctoral student has formulated three scientific-applied contributions and one applied contribution, which fully correspond to the aim and objectives of the dissertation.

7. Assessment of the extent of the dissertator's personal involvement in the contributions.

Having known Eng. Rostislav Bozhkov, since 1996, both as a student and doctoral candidate, I can confidently affirm that all experiments, data analyses, conclusions, and the formulated contributions are entirely the result of his effort.

8. Critical comments and questions.

I have several critical remarks and recommendations for the doctoral student: First, the number of cited literature sources is inaccurately stated in the abstract (76 instead of 82). Second, in Chapter One of the dissertation, specific texts (pp. 7, 8, and 9) are elaborated in unnecessary detail, lacking scientific value and more suitable as material for teaching aids. Third, I recommend that the doctoral student direct future publications to specialised scientific journals and established academic forums.

9. Published articles and citations.

The doctoral student has submitted four publications—three single-authored and one co-authored with the supervisor. One is currently in press, and the rest have been published in a journal of the Scientific and Technical Union of Mechanical Engineering. There is no data on citations by other authors. From the presented materials, it is evident that the doctoral student accumulates 60 points in accordance with the Minimum National Requirements (MNR) for the educational and scientific degree "Doctor."

10. Assessment of the publications on the dissertation: number, nature of the publications in which they are printed. Reflections in science - use and citation by other authors.

The presented abstract reflects objectively the structure and content of the dissertation.

CONCLUSION:

Based on the different research methods learned and applied by the PhD student, the correctly derived experiments, the made generalisations and conclusions, I consider that the presented dissertation meets the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADASRB) and the Regulations of the University of Forestry for its application, which gives me the reason to evaluate it as **POSITIVE**.

I take the liberty of suggesting that the Honourable Scientific Jury also vote in the affirmative and award M.Sc. Eng. Rostislav Bijilov Bozhkov, the educational and scientific degree "**Doctor**" in the scientific speciality Technology, Mechanisation and Automation of the Woodworking and Furniture Industry.

Date: July ,2025
Sofia

**PREPARED
THE OPINION:** .

(Prof. Dr. Eng. V. Brezin)