

-

o you by

 *Browse Posters » Search result » Poster ECR 2024 / C-22810*

POSTER SECTIONS

Coverpage

Learning objectives

Background

Findings and procedure details

Conclusion

Personal information and conflict of interest

References



ECR 2024 / C-22810

Exploring Cork Quality and Density: A Preliminary Investigation Employing Computerized Tomography

Congress:

ECR 2024

Poster Number:

C-22810

Type:

Educational Exhibit

Keywords:

Computer applications, Radiation physics, Radiographers, CT-High Resolution, Experimental investigations, Technical aspects, Technology assessment, Image verification, Kv imaging

Authors:

J. Pinheiro, A. Abrantes, G. Brito

DOI:

10.26044/ecr2024/C-22810

DOI-Link:<https://dx.doi.org/10.26044/ecr2024/C-22810>

Learning objectives

The quality control of cork stoppers is mandatory to guarantee the perfect conservation of the wine. Cork has specific properties that confer great potential for new applications, therefore the use of new technologies to assess cork quality is inevitable. The aim of our study is to obtain a finer and more reliable quality control method for cork. Several samples of pre-defined quality were analysed using a computed tomography equipment

[Read more](#)

Background

Current practice with regard to the choice and initial classification of cork boards is based on traditional methods, that is, on the qualitative and empirical perception of experienced workers, but which, nevertheless, does not use measuring instruments, being a time-consuming process that requires each board to be analyzed individually. With the help of two cork cutters, several cork boards were selected and classified according to their quality and purity: 1- low quality; 2- medium quality and 3- high quality. The boards were subsequently analyzed by CT...

[Read more](#)

Findings and procedure details

Sample density was studied by placing an ROI (Region of Interest) to encompass as much usable material as possible in each sample, but not exceeding its limits, or to include the outer layer that is generally of no use (Table 1). The ROI was then evaluated using an average of the minimum to maximum density in the designated area of each of the samples, this process being carried out consistently in order to improve results and reduce measurement error. Using specific software to analyze the percentage...

[Read more](#)

Conclusion

With this experimental and prospective pilot study, the aim was to analyze cork samples using CT to establish an empirical and objective tool for evaluating samples of this

material, in order to assist in the choice and industrial classification. We observed that the distribution density curves assume a normal distribution in the highest purity samples. We also found that the amplitude distribution is also a key criterion for classification. The smaller the amplitude, the more homogeneous the material, which establishes a relationship directly proportional to...

[Read more](#)

Personal information and conflict of interest

J. Pinheiro: Nothing to disclose A. F. C. L. Abrantes: Nothing to disclose G. Brito: Nothing to disclose

[Read more](#)

References

Caudullo, G., Welk, E., San-Miguel-Ayanz, J., 2017. Chorological maps for the main European woody species. Data in Brief 12, 662-666. <https://doi.org/10.6084/m9.figshare.5114086> Fortes M, Rosa M, Pereira H. A Cortiça. Lisboa. Editor: Instituto Superior Técnico Press; 2004. Silva SP, Sabino MA., Fernandes EM, Correio VM, Boesel LF, Reis RL. Cork: properties, capabilities and applications. Int Mater Rev. 2005;50(6) :345–65. <http://www.maneyonline.com/doi/abs/10.1179/174328005X41168> Lopes MH, Gil a M, Silvestre a J, Neto CP. Composition of suberin extracted upon gradual alkaline methanolysis of Quercus suber L. cork. J Agric Food...

[Read more](#)

Table 1: Classification and measurements performed on the cork planks analysed (n=156).

Test/Field	Measurements	Quality Degree	Area and quality measurement	Min.	Max.	Standard Deviation	Amplitude
Low Quality	n=54	1	80mm²	471	51	48,2	567
Average Quality	n=50	2	110mm²	631	40	42,4	470
High Quality	n=52	3	150mm²	488	404	152,9	218

Table 1: Table 1: Classification and measurements performed on the cork planks (n=156)

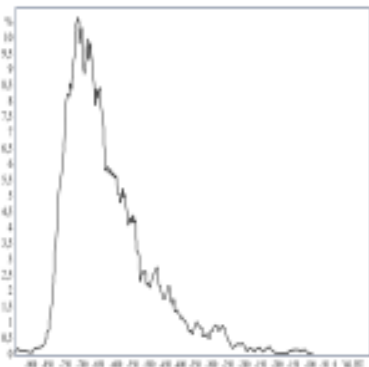


Fig 1: Graph 1: Low Quality Cork Variations

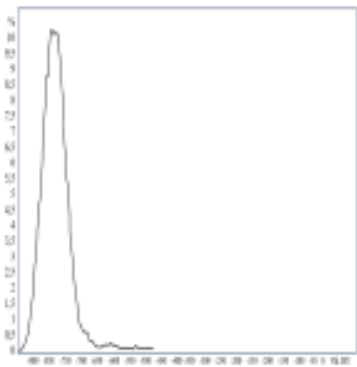


Fig 2: Graph 2: Medium Quality Cork

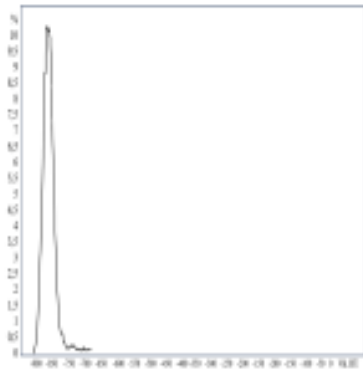


Fig 3: Graph 3: High Quality Cork

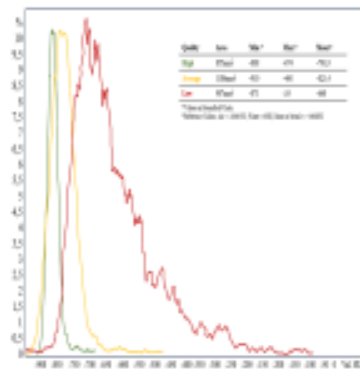


Fig 4: Graph 4: Superimposed variation curves of the three types of cork quality.

[Home](#) | [Browse posters](#) | [Help](#) | [Privacy policy](#) | [Disclaimer](#) | [Contact](#) | [myESR](#)

© 2003-2026 ESR - European Society of Radiology

ESR EUROPEAN
SOCIETY OF
RADIOLOGY