



# Moisture content behavior of *Erismia uncinatum* Warm. submitted to additional heat treatment at 90 °C after conventional drying

Saly TAKESHITA<sup>(1)</sup>; Ivaldo Pontes JANKOWSKY<sup>(2)</sup>

(1): Doctorate Student, Department of Forestry Sciences, University of São Paulo, ESALQ, [saly@usp.br](mailto:saly@usp.br)

(2): Associated Professor, Department of Forestry Sciences, University of São Paulo, ESALQ, [jankowsky@usp.br](mailto:jankowsky@usp.br)

## INTRODUCTION

The defects such as warping and cracking presented by wood are the result of their hygroscopic feature and consequent dimensional changes. To minimize this effect, the wood is submitted to air drying or kiln drying processes, however, the hygroscopicity is not completely eliminated.

## OBJECTIVE

The purpose of this study is to evaluate the effect of additional heat treatment at 90°C after kiln drying in reduction of hygroscopicity of *Erismia uncinatum* Warm.

## MATERIAL and METHODS

The choice of this temperature range is the possibility to apply this treatment in practice, using existing equipment in industries. After the kiln drying processes, the samples were submitted at 90°C for 24 hours in autoclave.

The conditioning stage was conducted according to ASTM:E104-02. The samples were placed in an environment with low relative humidity (silica) and after reaching equilibrium moisture content (EMC), they were stored in an environment with high relative humidity (KNO<sub>3</sub>). At the end of storage, the shrinkage and swelling rates of samples were measured.

## RESULTS and DISCUSSION

According to standard ASTM:D4933-99, at the beginning of the conditioning the gain or loss of moisture is very fast and, when the equilibrium is approaching, the mass change becomes very slow as can be seen in Figures 1 and 2.

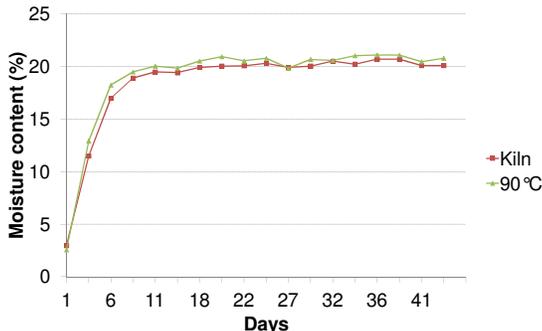


Figure 01. Moisture content during conditioning at high relative humidity

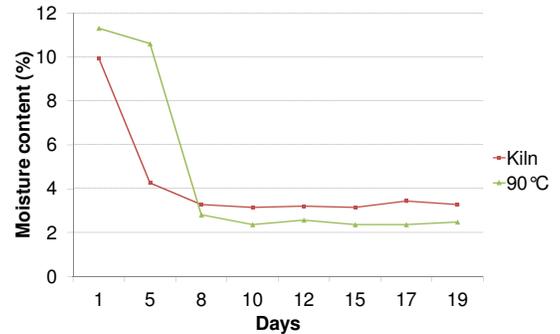


Figure 02. Moisture content during conditioning at low relative humidity

Figures 1 and 2 present the behavior of the equilibrium moisture content during conditionings. As can be observed during the moisture gain, there is a similar behavior between kiln dried and treated samples. However, in samples stored at low humidity, the EMC for samples treated at 90°C is lower than kiln dried.

## CONCLUSIONS

The heat treatments at 90°C after kiln drying can promote the reduction in wood hygroscopicity and consequently it can decrease the dimensional changes.

## BIBLIOGRAPHY

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