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[previous paper](#) [back to paper's list](#) [next paper](#)Effects of temperature and moisture content on the strength properties of African nutmeg (*Monodora myristica*)[\(get PDF\)](#) W. Burubai¹, A.J. Akor¹, A.H. Igoni¹, Y.T. Puyate²¹ Department of Agricultural Engineering, Rivers State University of Science and Technology, P.M.B. 5080, Port-Harcourt, Rivers State, Nigeria² Department of Chemical/Petrochemical Engineering, Rivers State University of Science and Technology, P.M.B. 5080, Port-Harcourt, Rivers State, Nigeria

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abstract The effect of temperature and moisture content of African nutmeg seed coat was studied as it affects compressive force, deformation, failure stress, strain energy and modulus of elasticity (firmness). Quasi-static compressive tests were conducted at sample temperatures of 60, 100, 140, 180 and 220°C. Similar tests were also performed at moisture content levels of 8, 11.2, 14, 17.4 and 28.7% (db) in an axial loading orientation. Investigations revealed that the force needed to crack open the seed coat decreased from 52.8 to 32 N at temperatures of 60 and 220°C, respectively. A similar trend was also observed as compressive force decreased from 56.6 to 33 N and as moisture levels increased from 8 to 28.7%, respectively. Deformation values were observed to increase from 0.64 to 0.97 mm for 60 and 220°C, respectively. These values of deformation varied from 1.07 to 1.54 mm at moisture content levels of 8 to 28.7%, respectively. Failure stress, strain energy and Young's modulus all tended to decrease with an increase in temperature. Also, as moisture content increased, failure stress and modulus of elasticity decreased. However, an increase in strain energy was observed from 0.0201 to 0.0341 N mm for an increase in moisture from 8 to 28.7%, respectively. Based on these findings important recommendations are made.

keywords African nutmeg, compressive force, deformation, failure stress, strain energy