

## Assessing the Mechanical Safety, Durability, Strength, and Stability of Wooden Furniture Produced in Ghana

**Authors :** Haruna Seidu, Francis Wilson Owusu, Michael Mensah, Felix Boakye, James Korang, Safia Ibrahim

**Abstract :** Over the years, wooden furniture produced in Ghana had no means of testing their products against standards. It was therefore difficult for such furniture producers to know whether their products conform to international standards. The setting up of the ISO 17025 compliant laboratory has become a reference and accessing point for determining the quality of the furniture they produce. The objective of the study includes the determination of mechanical safety, durability, strength, and stability of wooden furniture produced in Ghana. Twelve wooden furniture manufacturers were randomly selected to design furniture (chairs and tables) for testing. 9 out of the 12 produced chairs, and three provided tables. Standard testing methods were used in this experiment, including GS EN 581-1, GS EN 581-2, and GS EN 581-3. The test results analysis indicates 55.6% of the chairs tested passed all applicable tests. 66.7% of tables tested passed all the applicable tests. The percentage pass and failure of the 12 furniture were 58.3% and 41.7% respectively. In conclusion, chair manufacturers had good designs that withstand the standard testing of strength and durability; most failures occurred largely as a result of poor stability designs adopted for the construction of the chairs and tables. It was observed that the manufacturers did not use the software in designing their furniture.

**Keywords :** durability, international standards, mechanical safety, wooden furniture design

**Conference Title :** ICWSET 2021 : International Conference on Wood Science, Engineering and Technology

**Conference Location :** New York, United States

**Conference Dates :** April 22-23, 2021