

Determination of static friction coefficient of a material using clamp method

ABSTRACT

The increasing importance of climbing mechanisms in construction and maintenance work arises from the necessity of safe and efficient access to hard-to-reach areas. However, there is still limited research on the clamping force of various materials required for developing climbing mechanisms. To address this, further research is needed to investigate the clamping force and static coefficient of friction of different materials on-site. The main objective of this research is to explore the relationship between clamping force, static coefficient of friction, and applied gravitational force while investigating the static coefficient of friction of different materials on a pole. A clamping device has been proposed for evaluating the static coefficient of friction for different plastics and rubbers. A test method using clamping force as independent variable has been discussed for using such apparatus. The experimental results revealed that rubber materials generally exhibit higher static coefficient of friction than plastic materials. Its findings can serve as a valuable foundation for future research and the development of climbing mechanisms to enhance their usage in construction and maintenance work.