



Mechanical Properties of Friction Damper Using Different Layer of Interface

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Abstract

The energy dissipation capacity of structural elements plays a vital role in a structure's seismic resistance and ductility. Natural Damping of Reinforced concrete structure is insufficient to discharge higher energy during a seismic event. This necessitates the use of a secondary source such as dampers or isolators to release the input energy without causing major structural damage. This article is mainly focused on the mechanical properties of the frictional damper. In a friction damper, the coefficient of friction between the damper plate enhances the resistance and energy dissipation. This study focuses on the influence of rubber-based interface material on the cyclic behaviour of damper. This frictional damper consists of steel plates with a dry friction compound, which creates friction between the components. The purpose of this device is to enhance the local performance of the beam-column joint. Different torque has been used to understand the friction coefficient and energy dissipation capacity of the damper. Friction dampers work by slipping friction plates at a predetermined force, forcing the surface to slide, and producing friction, therefore dissipate energy. Several critical metrics are evaluated, including hysteresis behaviour, energy dissipation, damping ratio and coefficient of friction. The test result shows that at different torque level interface material plays a crucial role in damping capacity and resistance to the applied force.

Keywords: Passive device, Rubber-based material, Energy dissipation, Coefficient of friction, Damping ratio, Torque level