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# Magnetorheological Elastomer - An Innovative Anti-Vibration Rubber from Waste Materials

▶ COPYRIGHT : (LY2018004329)  
▶ PATENT SEARCH :  
NOVEL AND INDUSTRIAL APPLICABLE



## Introduction

**Magnetorheological Elastomer (MRE)** is an innovative vibration absorber that is engineered based on natural rubber, industrial waste Nickel Zinc Ferrite particles and waste latex glove. Utilization of industrial waste Nickel Zinc Ferrite and waste latex glove in MRE would reduce the environmental problem due to improper industrial waste management and shortage of land fill solid waste disposal for rubber glove.

## Problem Statement

- Recent devastating earthquakes around the world has exposed a need for buildings that can withstand vibration
- Vibration failure could also occurs in automotive engine mounting, railways and machines
- Vibration often leads to failure of structures and machine parts

## Conventional damping material requires:

- Natural rubber reinforced carbon black filler.
- Carbon black filler is derived from non-renewable resources- petroleum based
- High energy usage to produce carbon black.
- Global warming issue

## Novelty and Inventiveness

- Utilization of Waste Latex Glove in MREs. Reduce shortage of land fill solid waste disposal for waste latex glove.
- Elimination of carbon black for damping rubber. Utilization of waste ni Zn Ferrite as filler in MRE. Reduce the environmental problem due to improper industrial waste management and minimize the depletion of petroleum resources-reduce global warming issue
- Material costs is cheaper than conventional damper

## Intellectual Property Status

- Copyright granted by MyIPO (LY2018004329)
- Patent Search (USM/IO/PT/HA/18006)- Novel and industrial applicable

## Usefulness and Application

- Anti-Vibration Automotive Products
- Railways pad
- Vibration pad for machine
- Noise reduction
- Earthquake house bearing

MRE damper offers several distinct advantages when compared with conventional damper.

- Excellent vibration damping, shock resistance and chemical resistance
- MREs can be used alone or adhere to metal inserts or mounting plates.
- Maintenance Free- does not corrode and requires no lubrication
- Low production costs.

## Status of Invention

- Prototypes development – Kumpulan Jebco (M) Sdn. Bhd.- Automotive Anti-Vibration Rubbers

## Market and Affordability

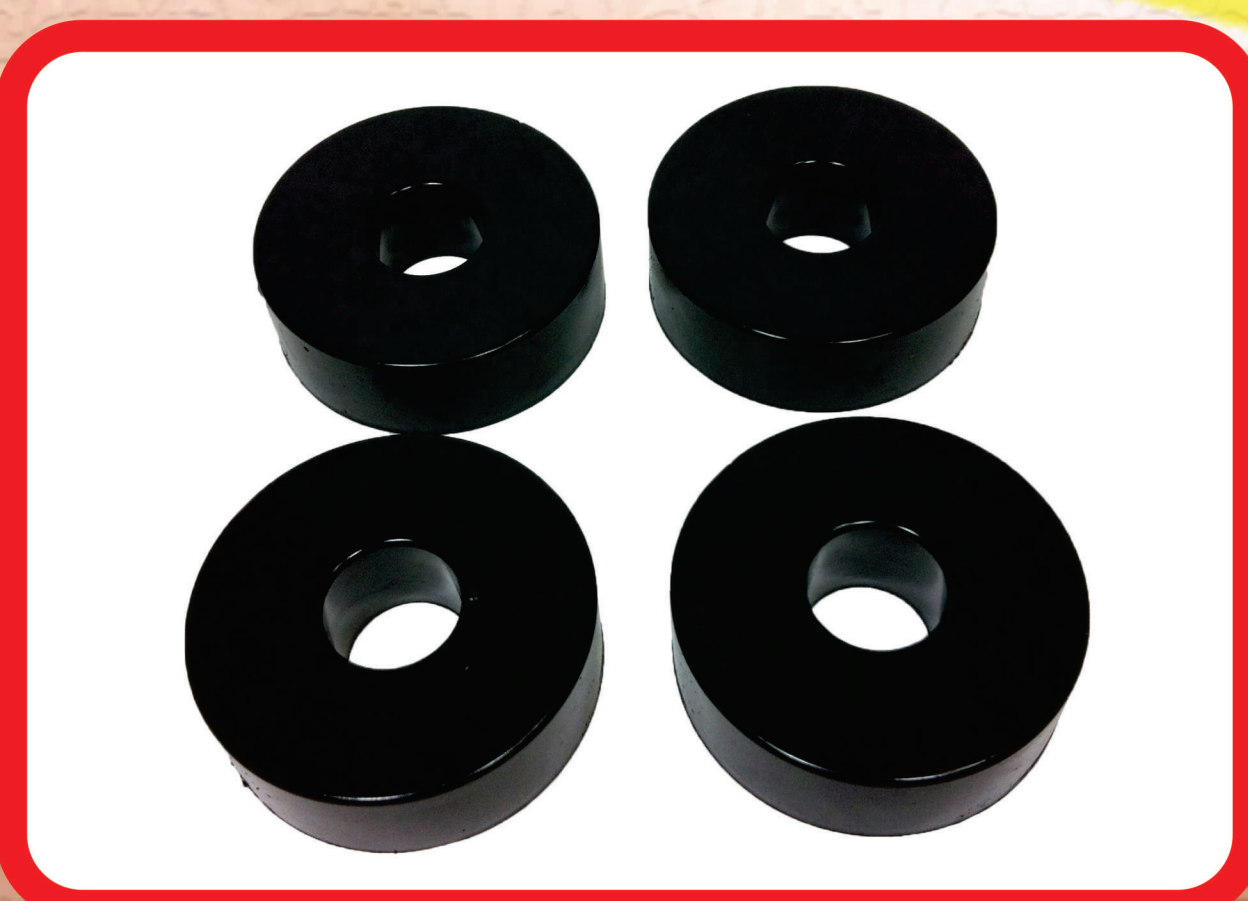
- Industrial Engineering rubber market is projected to grow to USD 33.82 Billion by 2022, CAGR of 4.6%.
- The growing demand from the automotive, and building & construction industries in the Asia Pacific acts as a key growth driver.
- The frequent unstable earthquake disaster around the world is contribute to damper industries to shakes up market
- MRE material costing is 20-28% lower compared with conventional products. (MRE= RM 5.13/KG vs Competitor Products = RM 6.50-RM 7.10/KG)

## Potential Partners

- Automotive, machinery, construction and structure industries

## Knowledge Management

- FRGS
- Publications – 6 ISI Journals



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