

# Advances in Automobile Engineering

## Side impact collision attenuation cushion

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### Abstract v

Motor vehicle safety takes the highest priority in motor vehicle design. Thanks to efforts undertaken by motor vehicle manufacturers, more people walk away from motor vehicle accidents than ever before. Recent technological advances such as automatic seat belts, accident avoidance systems, driver alert systems, anti-lock braking, and the like all play an important part in keeping drivers and passengers safe. Another safety device, typically deployed as a last-ditch effort is that of the air bag. While such devices do a great service for front seat passengers, occupants in rear seats often do not fair so lucky. Side air bags help somewhat, but are often too high in the vehicle to do any real good. Children in rear seats of passenger vehicles are thus vulnerable to great injury during a side impact from another vehicle, as existing devices do not adequately protect children seated in the rear of passenger vehicles from severe injury during a side impact of another vehicle. Accordingly, there exists a need for a means by which rear seat occupants in a motor vehicle can be protected safely during an accident. The development of an impact absorption device for motor vehicle rear seat occupants fulfills this need. Accordingly, since the invention of motorized transportation, there have been 3 primary patents that protect children seated in the back seat; the seat belt, the child safety seat and the air bag as mentioned.

Somehow, the evolution of these great inventions was a terrible oversight. Inches from our innocent children is a metal door covered in a mostly hard plastic shell. Rear seat airbags have been designed to cover the window portion in only some newer vehicles, yet millions of vehicles on the road today in the USA (1 billion globally) have no airbag for the door next to our kids. Tragically, the statistics (IIHS, NTSB, NHTSA, etc.) involving child passengers in a side impact collision (at even 30 miles an hour) show severe injury or death to the child on the impact side. As detailed in my patent publication, the impact absorbing cushion consists of a thin polypropylene planar base that slides under or behind a car seat, booster seat, infant car seat, etc. from the door side. A shock absorbing attenuation cushion is mounted on top and adjusted to roughly the height of the door where it meets the window bottom. The device does not interfere with the function or integrity of the door, and is easy to install/remove. The cushion is made up of one inch padding and one inch of shock absorbing material. Should the car encounter a side collision from another vehicle, the child/infant would hit the attenuation barrier and not the door, potentially minimizing an otherwise tragic outcome. This invention could save thousands of lives, prevent scores of injuries, and reduce costs to insurance companies.

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