

Egg In the Wall

Can You Protect Your Egg?



For years, the trusty seat belt provided the sole form of passive restraint in our cars. Since model year 1998, all new cars sold in the United States have been required to have airbags on both driver and passenger sides. To date, statistics show that airbags reduce the risk of dying in a direct frontal crash by about 30 percent. Your challenge is to engineer and design a safety restraining system to protect your driver (a raw egg) from a violent, one-meter away, collision with a wall.

Impulse Momentum $F \cdot T = (\text{change in}) M \cdot V$

Problem: Design a way to protect your normal, not boiled, raw, white, chicken egg in a violent collision.

Apparatus: Pop Bottle (20 Oz Soda Bottle) Normal, white shelled, chicken egg
Any packaging materials you choose
Pop bottle accelerator (provided by Teacher)
Air Compressor (provided by Teacher), Cement wall (found at School)
Students willing to build apparatus (Required by Teacher for grade)
Any glue, cement, bonding agents, duct tape, packaging material etc. needed for project.

Procedure: Attach your egg in the protective device you have built so the bottle can be pressurized and launched into the wall. **Egg protective device must remain rigidly attached to Bottle!**

Rules: Your apparatus must be no longer than 1 meter, and no wider than .25 meter, (from mouth of bottle to end of protection).

You may use any protective materials you desire, but you need to be able to remove your un-broken egg in 1 minute to receive full credit.

Scoring: All surviving eggs will be sorted by mass (of complete apparatus, pop bottle included). The one deemed “best” will be least massive that survives.
100 points, did not crack or break mass in lowest third of survivors.
95 points, did not crack or break, middle 1/3 of survivors.
90 points, did not crack highest 1/3 of survivors.
85 points for cracks no yoke
80 points for cracked but still in apparatus
75 points for smushed and no leaks
60 points for eggs and apparatus that make a mess.



Due: _____ (Write Date Here)