



### Background:

Inelastic collision involves the deformation of an object due to impact from a projectile. The deformation, which occurs in such a contact, will absorb collision force. This principle is useful in designs, which intentionally deform from impact to reduce kinetic energy, such as a car bumper.

The objective of this competition is to design and construct the smallest vessel to catch and protect two raw eggs released from a height of  $30 \pm 5$  ft.



### Specifications:

1. Each school may have an unlimited number of teams or individuals participating. Each design must be unique and the vessel must clearly be labeled with the names of each team member and school. There will be no more than two students per team and a student may only be in one egg drop team.
2. The competitors may use any inexpensive and readily available materials to build a vessel to catch and protect a raw egg. In other words, no *titanium shafts, gases, motors, purchased kits, etc.* may be used.
3. Materials which are not allowed in the construction of the vessel include balloons (or similar items filled with air or other gasses), gels, pastes, potentially explosive/combustive/dangerous/ hazardous materials, and packaging materials (bubble-wrap, soft Styrofoam, peanuts, etc). Examples of other restricted materials include those that will leave residue outside of the vessel.
4. The vessel must remain intact after impact and may not have components that “fly out”.
5. The vessel must sit freely on the ground and must not exceed a footprint of 2 ft x 2 ft.
6. The team will have 1 minute to place the vessel in the egg-landing zone. Two eggs will be dropped, one after the other, from a bucket truck equipped with a weighted guide-line to predict the landing site.
7. Once the team indicates their vessel is ready for the drop, the team must exit the egg-landing zone and no modifications may be made. If elements such as wind, movement of the platform, etc. cause an egg to miss the projected target, another egg will be dropped at no penalty. If the re-dropped egg misses the vessel the team will score 0 points; the goal is to create a robust design.
8. Any vessel not meeting specifications will not be allowed to compete.

### The Competition:

1. Vessels must be brought to the competition fully assembled. Raw, store-bought Grade A large chicken eggs will be provided on the day of the event.
2. Height of the ground to the highest point of the vessel as well as the largest width will be measured prior to the competition. The winning team will have a vessel, which has the smallest height. Vessels with surviving eggs will be ranked above those with damaged eggs regardless of the height.
3. No practice drops will be allowed. Each team will have at most two attempts at placement and drop. A second drop will be attempted only if the first drop misses the vessel entirely.
4. Adjustments to the vessel may not be made after the 1.0 minute placement time of the vessel into the egg-landing zone. Disqualification will occur if a vessel is not set once the time has elapsed.
5. All contestants and observers must remain outside of the egg-landing zone during the drop for safety reasons. At least one team member must be present for their team’s drop.
6. A team member must be able to easily remove the eggs from the vessel for the judges’ inspection. Any vessel that is not easily retrievable will be disqualified. Any crack in the egg shell, fluid leakage, or egg which bounces out of the vessel equates to an egg which did not survive.
7. In the event of a tie breaker the items below will be followed in this order:
  - a. Shortest length of vessel at largest width
  - b. Coin toss