

Prototype Testing:

Engineering Metric Being Tested: Force toilet can withstand

Purpose:

This protocol will analyze the maximum force the toilet can withstand without yielding. This is important because the toilet design must be able to accommodate the force generated from the weight of an average person. The design must also be able to withstand the forces of transportation and everyday maintenance.

Goals:

The toilet should be able to withstand the force of at least 1305 N, this is the force generated by the weight of an average person.

Conclusions:

This section of the protocol will include a brief summary of the experiment as a whole. Including overall success of the design and how we plan to move forward of the design.

Materials:

- Toilet system CAD model
- Complete toilet model
- Measuring tape

Procedure:

1. Using the provided CAD model, subject the structure to a force in the y-direction
2. Set the applied force to 1305
3. Verify and record if the structure does not yield under the applied force
4. Continue increasing the applied force until the structure yields
5. Record the maximum force the toilet can withstand without yielding

Real World Test Simulations:

1. Hold the toilet model a meter off the ground.
2. Gently place the toilet down to simulate typical use.
3. Repeat with heights of 0.25, 0.50, and 0.75 meters.
4. Record if any damage occurred.

1. Set the toilet model in a starting position on a smooth floor to minimize friction.
2. Slide the toilet a total distance of 1 meter.
3. Repeat with lengths of 2, 3, and 5 meters.
4. Record if any damage occurred.

Results:

Raw data will be included here. Such as tables, graphs, calculations.

ER5

G4

Analysis:

The analysis will be completed with the experimental goals in mind. Using the results portion of the protocol, the analysis will be written with the purpose of validating the goals of the experiment.