

Element C: Presentation and justification of solution design requirements

Our primary stakeholders will be individuals on crutches, since they will be the end user of our product.

Frequent in-person, email, and telephone interviews with an individual currently on crutches, and discussions with the physical therapists led us to establish a base-line of requirements, which were based on their concerns and desires.

We then looked at similar existing products, and filed patents, and we listed those product attributes that we liked, and those characteristics we wanted to add. These steps enabled us to refine and establish the final design specifications

The results of this research and evaluation are listed below. The specifications are listed in order from highest priority to lowest.

Performance Benchmark Design Constraints

1. Minimize spillage: no spills if liquid is ½ inch or greater below top of cup. It is impractical to fill a beverage cup above this line- it cannot be carried effectively without a cover.
2. Inexpensive, selling price \$9.00 - \$14.00 based on similar existing products
3. Must fit on standard crutch, since this is the type issued to most patients.
4. Will hold mugs with diameters of no less than 3 inches and no greater than 4 inches. These dimensions will encompass most of the commercially available mugs and disposable cups.
5. Will hold mugs with heights of no less than 4 inches and no great than 6 inches. These dimensions will encompass most of the commercially available mugs and disposable cups.
6. Sturdy: won't break if:
 - dropped from a typical hand "holding height" of 3 ft
 - the crutch falls from an upright position or slides down from a resting position
 - while being attached to crutch
7. Light weight- weighs 2 lbs or less. Our consumer

expressed that when she is trying to carry objects more than 3 lbs, her balance is thrown off.

8. Suitable for holding other non-food items (keys, coins, Rx bottles,...) so as to be more useful and convenient.

9. Top rack dishwasher safe and made of BPA-Free Plastic due to health concerns.