

Tea Bottle Report - Group 10

What it does

The Tea Bottle allows the user to recreate the simplicity of steeping their tea to their preferred strength from anywhere. The portability of the Tea Bottle allows the user to variably control the steep time of their tea and begin drinking right after they are finished steeping without the need to remove any leaves. Furthermore, with the tea leaves being stored in a separate compartment the user does not have to worry about immediately throwing them out once they are finished steeping their tea. The tea leaves compartment is sealed so that the Tea Bottle can be kept in one's bag without the worry of the wet tea leaves seeping out of the bottle. Finally, the compartmentalization of the design allows the Tea Bottle to be easily disassembled so that it can be easy and thoroughly cleaned to keep the bottle safe from bacteria buildup.

Your Inspiration

Flavour, bitterness and caffeine levels all depend on the amount of time the leaves are in contact with the water. Everyone has their own preference, but as a general rule, you should steep your teas between 2-6 minutes according to the British Standards Institute guidelines. A survey conducted for [British Science Week](#) has found that 80 percent of tea drinkers don't hit this timing window as expediency is causing us to throw chemistry out of the window. We aim to let our customers have more convenient and practical control of this process to suit their individual needs.

How it works

The design consists of the double walled bottle where the hot water is stored, the tea leaves compartment where the user packs the tea leaves, and the mechanical iris which is actuated with a twisting motion that starts and stops the infusing process. These three compartments are attached together with threads that users can easily assemble or disassemble if they want to steep their tea or clean the bottle. The mechanical iris contains a steel mesh which separates the contents of the tea leaves compartment with the hot water in the bottle. When the user wants to steep their tea, they first have to unscrew the tea compartment section and pack it with their desired leaves. Once packed they will then screw on the compartment back onto the bottom of the bottle. They will then pour the hot water from the top of the bottle into the double

walled bottle portion. To ensure the tea is being steeped the mechanical iris will be twisted into the open position. The user will then be able to see the colour of the tea as it is steeping. Once it reaches their desired strength they will twist the mechanical iris closed, stopping the infusion process. The tea is now ready to be consumed. Once finished drinking, whenever the user finds a garbage they can unscrew the tea leaves compartment to throw out the wet leaves. Or, the user can keep the bottle in their bag stress-free until they return home as it is completely sealed. The Tea Bottle is disassembled by unscrewing each component so that it can be placed in a dishwasher or easily hand washed.

Design Process

After defining the problem, we brainstormed several design options for mechanisms that could separate the tea compartment from the main bottle. The iris was the simplest to use, in addition to being easy to understand and control. It has low force requirements and a textured rubber exterior makes it easy to grip. Upon receiving potential user feedback, the bottle material was altered from glass to double walled stainless steel in order to reduce the overall weight of the object. However, a key selling point is the user can control the steepness level of the tea and this is commonly determined by colour. To solve this, glass windows were added so the user could see inside without opening the bottle.

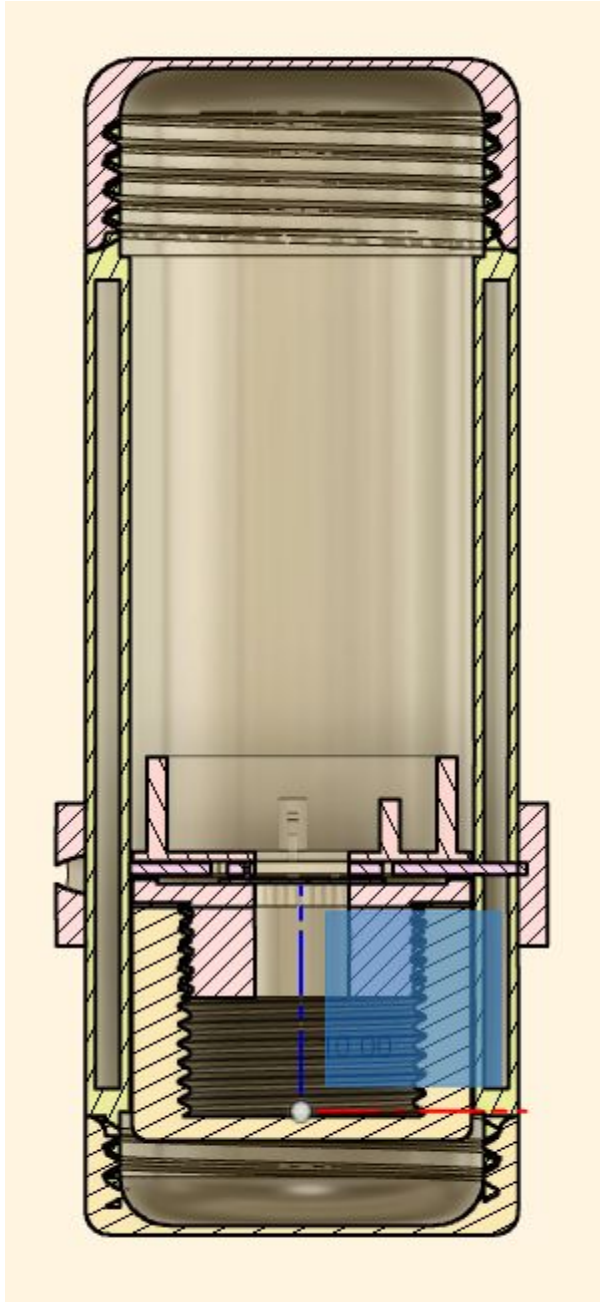
How it's different

The Tea Bottle differentiates itself from competitors due to a combination of effectiveness and sleekness in design. The current products in the market force the user to carry multiple parts with their tea bottles, have to remove the strainer before drinking, or unable to stop the steeping once the water has been poured into it. Our design improves on these existing models in a way no other bottle has before. Everything that the user would need to steep their tea is contained within the tea bottle so that they don't need to carry around any unnecessary compartments. This was seen in competitor's products as they had a separate compartment for tea leaves that had to be screwed on to steep and screwed off to drink. Furthermore, with the mechanical iris design the user can begin or stop steeping their tea with a simple twist of a grip. Once twisted closed the water is completely isolated from the strainer and will only begin steeping once it is twisted open. This improvement focussed on the struggle of other models that required the user to have to remove the wet strainer from the bottle before the user could drink the tea. All these features encompassed in a double walled insulated bottle allows the tea to stay hot, and the

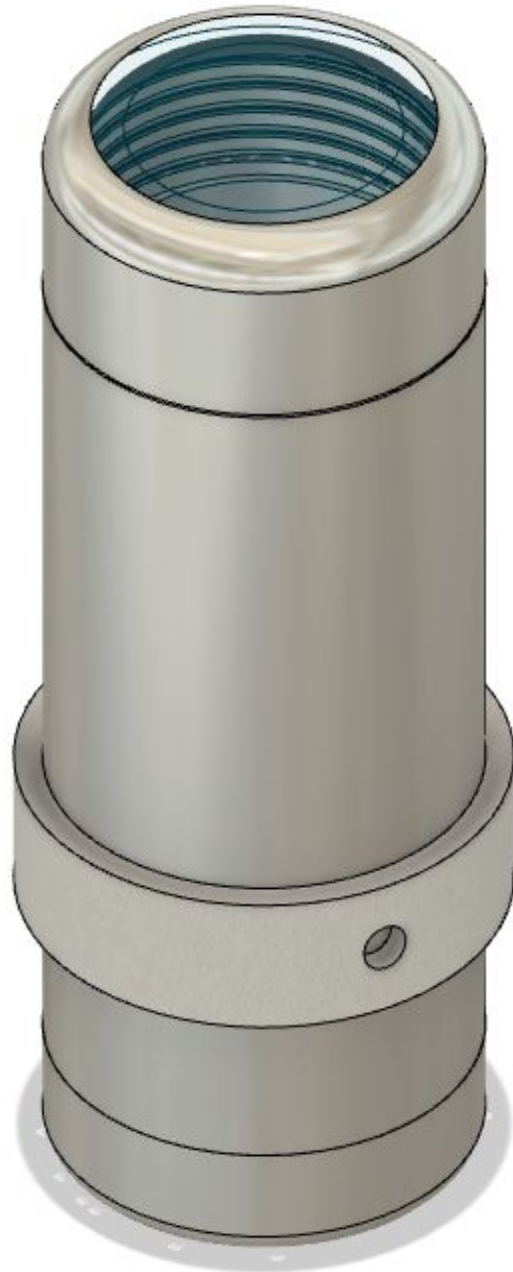
windows used to check steepness ensure the tea is to the strength of the drinker's preference every time.

Pictures

Cross Section of the Bottle



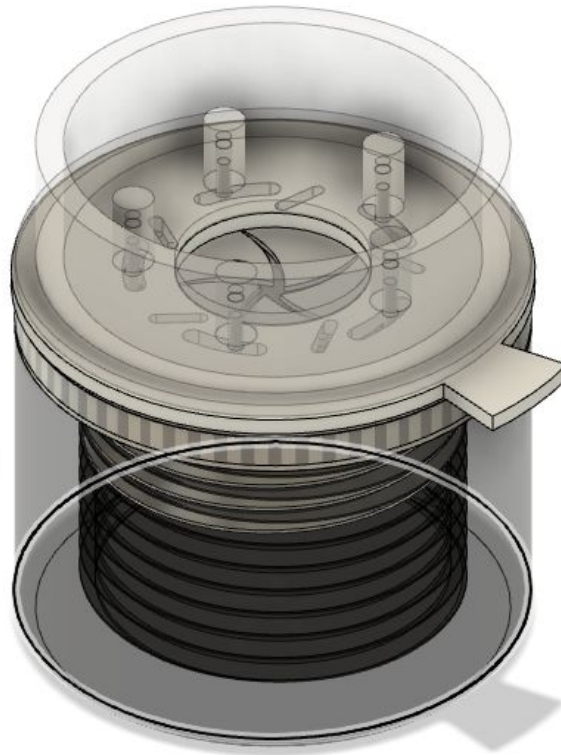
Fully Assembled Product



Top View of the Bottle With Iris



Iris Module Installed in the Bottle



Video Showing the Product and the Iris Functioning

Separately submitted on avenue