

Paper towel absorbency data



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Abstract

The overall purpose of this experiment was to examine and determine which paper towel was the strongest and most absorbent. Two brands of paper towels were used as test samples. The analysis was designed to provide data that would compare the absorbency and strength of Sparkle and Great Value Paper towels. It was hypothesized by our group that the more expensive paper towel Sparkle; would not be able to surpass the strength and absorbency of the Great Value brand paper towel.

The absorbency test was determined by placing individual paper towels into beakers with precisely the same amounts of water, in 30 second intervals, removing them and recording the data. The strength testing was conducted in a similar fashion; except weights of various increments were placed on wet paper towels, until the paper towel sheared, and the weights fell through, the data again was recorded for each of the three measurements.

After conducting test boundaries for both strength and absorbency, it was concluded that Great Value brand of paper towel was superior to the Sparkle brand. The hypothesis that sparkle was inferior to GV was correct in this instance. But this makes one look a bit deeper at the paper towel itself. Is its absorbency and strength dependent on fiber content, texture or actual sheet size. If tested again maybe different parameters might offer more definitive results.

Introduction:

There are many brands of paper towels found in the market place. While most claim to be the strongest and provide maximum absorbency; they also tend to have a higher price point as well. Research has shown that price point, does not necessarily support the concept of better strength or absorbency. To test this theory, Scientific investigation can be used to examine different brands of paper towels in order to determine which brand is the strongest; and which brand is the most absorbent. The brands chosen for this examination were Great Value and Sparkle paper towels. Each of these brands is relatively inexpensive and are marketed to be favorable products.

Great Value paper towels are offered exclusively at Walmart stores. They are marketed as being super absorbent with just the right amount of Strength to tackle most any spill. Additionally, their strength and soft texture make them an effective yet gentle paper towel. Great Value paper towels come in 2 ply double rolls. The convenient pre-split sheets are easily torn from the roll, making them handy for those unexpected mishaps. (Walmart. com) Overall Walmart advertises their paper towels as being an excellent value at an affordable price. Walmart carries a variety of paper towels ranging from household to industrial use. Their products are available online or in all stores locations.

Sparkle Paper towels manufactured by Georgia Pacific has a 4.7 out of 5 rating. Sparkle claims to have just the right amount of, value, style and performance without breaking the bank. A basic paper towel to tackle the simple daily chores and messes that occur in everyday life. (sparkle towels. com) Sparkles manufacturer, Georgia Pacific not only promotes products that

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help improve individual lives but also uses natural resources and recycling to enhance quality of life within their communities and the environment. (gp.com)

The goal of the experiment is to compare the absorbency of two brands of paper towels. Each brand paper towel was exposed to the same treatment and then measured as to their individual data sets for absorbency and strength. It was hypothesized that the more expensive paper towel Sparkle would not be able to surpass the

strength and absorbency of the Great Value brand paper towel.

Methods/Materials

The independent Variable would be the brand of paper towels.

The dependent variable in the absorbency test; is amount of water left in each beaker once the paper towel was removed.

The dependent variable for the strength test would be the amount of weights added

The two levels of treatment were testing for strength and absorbency

Control variables:

The amount of water used in each beaker

The folding of the paper towels

Temperature of liquid

The time – 30 seconds

Same amount of drain time 5 seconds

Materials

6 sheets of Great value paper towels,

6 sheets of Sparkle paper towels

3 sparkle + 3 GV for the Absorbency test:

3 for Sparkle + 3 GV for the Strength testing.

1x 1, 000 mL Beaker, 1 Pipette, 1 flask of water, plastic tub,

15 weights of various sizes ranging from 1oz to 3oz

Writing Utensil

Note pad for recording data measurements

Methods

Absorbency Test

A graduated cylinder was used to measure and pour 300 mL of water into the 1000 ml beaker

Each paper towel was folded in half 4 times.

1 sheet of Sparkle brand paper towel was folded in half 4 times and placed into the beaker of water submerging it for 30 seconds.

After 30 seconds the towel was removed from the water, held above the beaker until no visible water was dripping from the paper towel.

(approximately 5 seconds)

The towel was then set aside in the plastic bin.

The finish amount of water in the beaker was then subtracted from the start amount.

The result was recorded for future reference

The exact same procedure was then repeated with the Great Value paper towel.

This process was replicated 3 times for both brands of paper towel

Each replicate was designed to determine how much water both brands of paper towel absorbed.

All data results were then recorded;

See results below represented in Table 1. 1 – Paper Towel Absorbency Data;

Strength Test

One sheet of Sparkle paper towel was placed on the desk surface in a single layer thickness

Two pipettes of water were then squeezed onto the center of each towel

Each towel was then suspended by being manually held by each of the four corners

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Weights were then added to the suspended paper towel in 3 oz increments.

Increments were increased until the paper towel gave way and the weights fell through.

The number of weights was then multiplied by 3 oz to give a total weight.

Results were recorded for future reference.

The exact same process was repeated with the Great Value Paper towel.

Each replicate designed to determine how much weight each paper towel could withstand before shearing.

This scenario was replicated 3 times for each brand of paper towel

All data results were then recorded:

see results represented in Table 1. 2 – Paper Towel Strength Data;

Results

The above testing allowed the group to observe and record very definitive results between the two brands of paper towels. It was noted at the end of testing that the Sparkle brand appeared to be less absorbent and not as strong as the Great Value. Indeed, both the brands appeared on the surface to be similar in structure, design and claim; however, the results show viable information that actually prove which one performed better during lab testing.

Overall the Sparkle brand absorbed 45 ml less water than the Great Value Brand. Verifying that it is considerably less absorbent. During the strength testing, both brands were subject to the same testing process which demonstrated again that Sparkle failed to meet the level of strength of the Great Value. Measuring about 12 oz less in overall strength than the Great Value Brand.

The original purpose of this experiment was to see which paper towel brand would be the most absorbent for the above testing produced a pattern of results that supported our original hypothesis, that the more expensive name brand “ Sparkle” would not measure up to the Great Value brand. Based on these results it can be concluded that the Great Value brand paper towel was stronger and more absorbent then the Sparkle. It did prove that our initial hypothesis was accurate. The two variables Which were used offer support to the fact that strength and absorbency do not rely on price point or brand name. The difference between the two is clearly seen in the measurement data. Note that data sets contained in Tables 1. 1 and 1. 2 clearly represent that the significant variances among the two brands in both absorbency and strength.

Table 1. 1 *Paper Towel Absorbency Data;*

Paper Towel Absorbency Data

Towel Brand	Start Amount (ml)	Finish Amount (ml)	Amount Absorbed (ml)
Great Value	300	260	Aprox 40 (ml)

Trial (1)			
Sparkle	300	290	Aprox 10 (ml)
Trial (1)			
Great Value	300	260	Aprox 40 (ml)
Trial (2)			
Sparkle	300	275	Aprox 25 (ml)
Trial (2)			
Great Value Trial	300	270	Aprox 30 (ml)
(3)			
Sparkle	300	270	Aprox 30 (ml)
Trial (3)			

Table 1. 2 *Paper Towel Strength Data*

Paper Towel Strength Data

Towel Brand	Start Amount	Number of 3 oz	Tear Factor/
	H2O	Weight	Strength
Great Value Trial	2 Pipettes	5 ea	15 oz
(1)			

Sparkle			
Trial (1)	2 Pipettes	2 ea	6 oz
Great Value Trial (2)	2 Pipettes	8 ea	24 oz
Sparkle			
Trial (2)	2 Pipettes	2 ea	6 oz
Great Value Trial (3)	2 Pipettes	5 ea	15 oz
Sparkle			
Trial (3)	2 Pipettes	2 ea	6 oz

Discussion /Conclusions

The evidence collected through this analysis demonstrates the data collected and recorded, supports the group hypothesis; that Sparkle paper towels would not be able to surpass the strength and absorbency of Great Value paper towels.

Thorough design set up and replication data confirms; Great Value is nearly two times more absorbent and two times stronger than the Sparkle brand. Interestingly, during the course of the experiment it could be noted that each paper towel performed differently; even when exposed to the exact same process. Thus, supporting the practice and use of replication. Performing 3 replications for each method of testing gave ample opportunity to observe

and discovery how testing procedures if not done appropriately or with proper forethought can skew potential data results.

In conclusion the group hypothesis was supported regarding which paper towel was stronger and more absorbent. Strictly by viewing the data results, Walmart's brand Great Value appears to be the leader in both absorbency and strength. However, it can be noted; the Great Value and Sparkle paper towels were different sizes. In order to produce a more precise controlled variable, both towels should have been cut to exact sizes. If this change were to be used; it could potentially affect the overall data. If the test were repeated using more precise paper towel measurements would it hypothetically change or improve the outcome?

Works Cited

- <https://www.gp.com/sustainability>
- <https://www.sparkletowels.com/explore>
- <https://www.walmart.com/ip/Great-Value-Strong-Absorbent-Paper-Towels-8ct/19400170>