

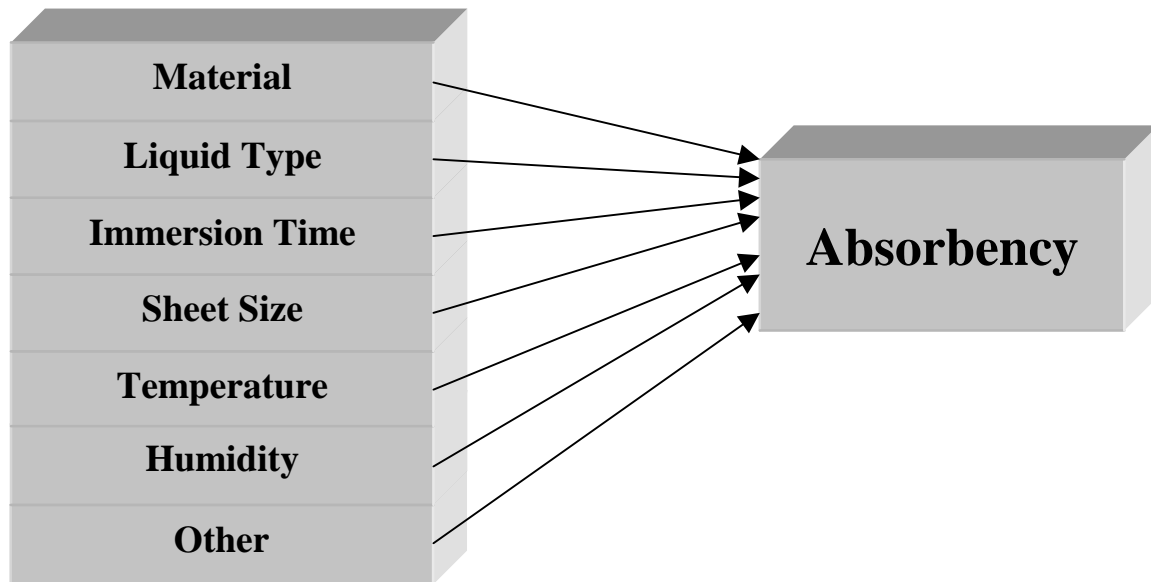
ABSORBENCY OF PAPER TOWELS

2. Selection of Factors

Absorbency is one of the most important characteristics of good quality paper towels. It shows how much fluid a particular brand of paper towel holds. In order to obtain reliable conclusions, we have to design the experiment very carefully. In this section we identify the factors that might affect the absorbency of paper towels.

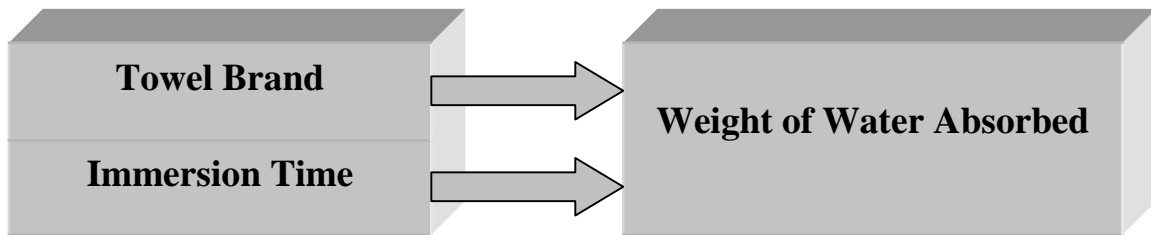
In the experiment the sheets of paper will be immersed in water for a specified time period and the weight of the water absorbed by the paper towel will be calculated as the difference between the weight of wet sheet and the dry sheet. We refer to the time a sheet tested has been immersed in water as *immersion time*.

The absorbency is affected by several factors such as the material characteristics, contact time, sheet size, liquid type, liquid temperature, surrounding temperature and humidity, and many others. The factors are displayed in the diagram below.



Only some of the factors can be controlled. For example, we cannot control surrounding humidity and temperature during the experiment. To minimize the effect of uncontrollable factors, it is very important that the levels of the factors are assigned at random to the experimental units in the study.

It seems that brand type and immersion time are the most important factors affecting absorbency. Therefore, we will use them as factors in our experiment. In order to neutralize some other variables, we will compare towels of the same sheet size, and we will use water as a liquid. The response variable is the weight of water absorbed by a towel (in grams).



The towel brand factor will occur at three levels 1, 2, 3, and immersion time will occur at three levels: 3 seconds, 5 seconds, and 10 seconds.

Write the names of these three varieties in the table below.

Factor	Level	Description
Brand	1	
	2	
	3	
Time	1	
	2	
	3	