

# Are Beeswax Candles a Better Alternative to Paraffin Candles? (LS11)

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## Research Question :

### **Is there a better alternative to paraffin candles?**

From this experiment, we aim to find a better alternative to paraffin candles, which contain petroleum – a non-renewable source of energy which has been critically running out and is a very harmful substance to the environment and user of the candle when burnt.

Beeswax is an eco-friendly alternative to paraffin. While paraffin produces carbon dioxide that is harmful, beeswax actually produces little to none. While many experiments have been conducted on eco-friendly candles, but the goal of our experiment is to be able to test the practicality of an eco-friendly candle, whether it is easy to make and how effective it is in reducing the harmful soot produced, compared to a paraffin candle for consumers to get a better understanding of beeswax candles and if they are actually better.



## Data Analysis & Results/Findings :



	1:1 oil is to beeswax candle	1:2 oil is to beeswax candle	Paraffin candle
Mass of calcium carbonate produced from limewater (g) after an hour	0.04	0.02	0.03

## Methodology :

- We tested the candles we had made in the ratios of 1:2 and 1:1 of vegetable cooking oil to beeswax, a paraffin candle made from one of the most common candles; birthday candles, for the amount of CO<sup>2</sup> they would produce when burnt.
- Placing each candle in a set up with limewater and left it lighted for an hour.
- Filtered the limewater mixture.
- The residue we got was the Calcium carbonate, which is insoluble in limewater.
- We left the filter papers to dry and weighed their weights and subtracted the weight of the filter paper and got the weight of calcium carbonate produced in the limewater when respective candle was burning.

## Interpretation & Conclusion :

The best candle would be one that produced the least amount of carbon dioxide which is the 1:2 oil to beeswax candle. Which shows beeswax is a better alternative to paraffin candles at the right ratio of oil added to it. However, when a higher ratio of oil is added to the beeswax candle, it causes more carbon dioxide to be produced when burnt as compared to the paraffin candle. While it is possible to make a candle purely out of beeswax, in order to allow the candle to burn consistently, oil must be added. From this experiment, we can see that oil and paraffin cause more carbon dioxide to be produced when burnt. Paraffin wax is made from petroleum or coal which contains carbon which is why it creates more carbon dioxide when burnt. Cooking oil usually is able to produce fumes and oxidises commonly around the temperature of 150°C. The oil in the vegetable oil contains the carbon that the plant it was made of when it went through photosynthesis and contains carbon from the carbon dioxide it took in. The fumes from the cooking oil itself is very harmful to the human body. Beeswax on the other hand is made from the honeycomb of bees and they release negative ions when burnt. The negative ions neutralise the positive ions of contaminated air hence producing less