

# How Does the Ingredients of a Lip Balm Affect How Fast It Melts?

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# Background Information (Terms)

**Melting Point:** The temperature in which a given solid will melt. If there is a higher melting point there is more heat required to melt a particular substance from solid to liquid.

**Solid:** Firm and stable; not a liquid or fluid.

**Liquid:** A substance that flows freely but is of constant volume.

**Temperature:** The degree or intensity of heat present in a substance or object.

# Background Information (Continued)

**Why was this topic chosen?**- The researcher's lip balm always gets spoiled whenever they leave it in the car, so they wanted to know if the ingredients impacted the how fast it melts.

**How is it beneficial to society?** - With this research, people could know at which temperature their lip balms will melt in the car and whether or not the ingredients of the lip balm affects how fast it melts.

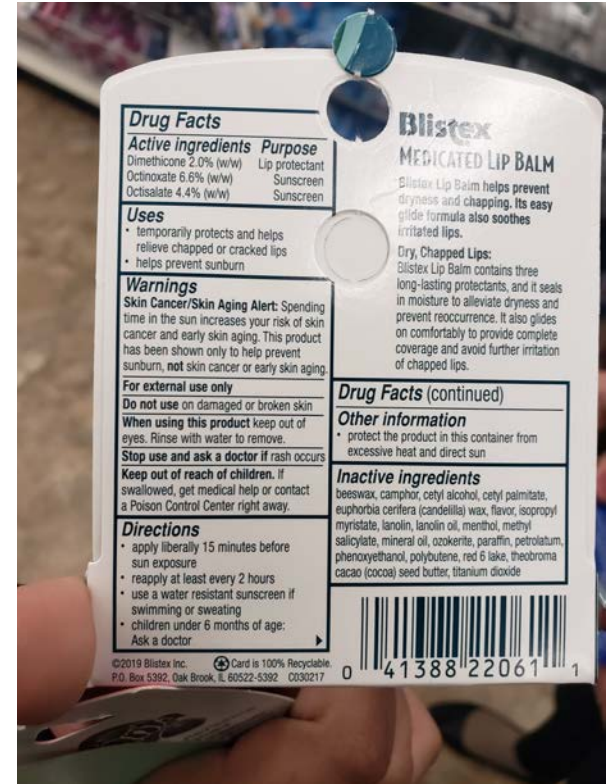
# Background Information (Continued)

The base ingredient of  
Vaseline was Petroleum Jelly



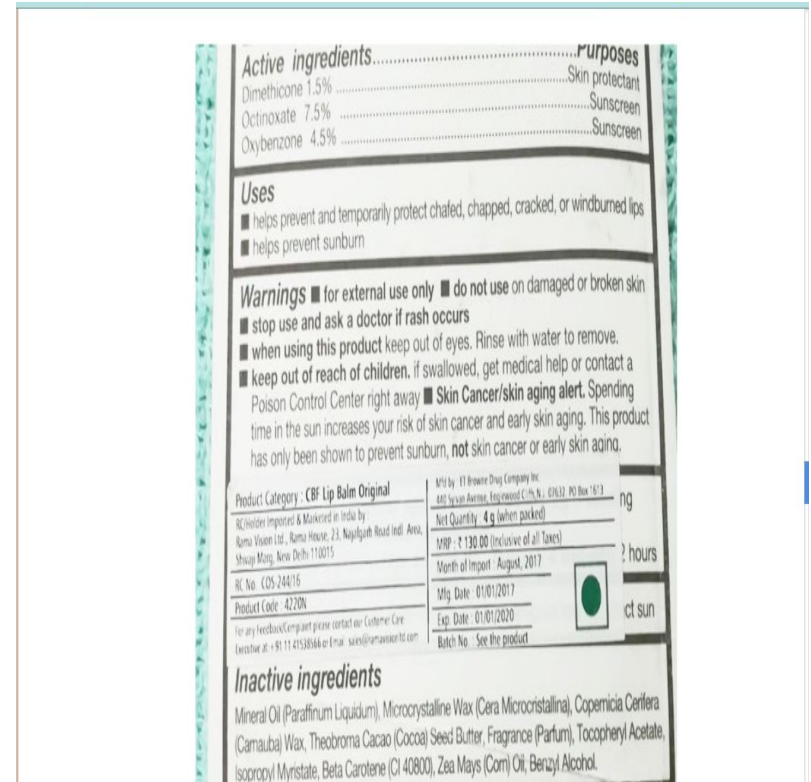
# Background Information (Continued)

The base ingredient of Blistex was beeswax



# Background Information (Continued)

The base ingredient of Palmer's was mineral oil



# Background Information (Continued)

The base ingredient of L.A. Colors was Coconut oil



# Processes

**How Melting Works:** Melting is a process that causes a substance to change from a solid to a liquid. Melting occurs when the molecules of a solid speed up enough that the motion overcomes the attractions so that the molecules can move past each other. The researcher will test this process by testing how fast the lip balm will melt according to the ingredients of that lip balm.



# Research Question

**Does the ingredient of a lip balm affect how fast the lip balm melts?**

# Hypothesis

If you melt each of the four lip balms at the same temperature, then the lip balm with the coconut oil (LA Colors) will melt the fastest. This is because the lip balm with the least melting point will melt first since it can melt the fastest in the least heat. According to MAAREC, beeswax's melting point is 49 degrees Celsius, the melting point of petroleum jelly is 55 degrees Celsius. the melting point of mineral oil is 40 degrees Celsius and the melting point of coconut oil is 24 degrees Celsius.

# Materials List

- 237 milliliters of water
- 4 empty Bowls
- 4 lip balms
  - Vaseline
  - Blistex
  - Palmer's
  - LA Colors
- Weighing scale (in grams)
- Butterknife
- Cutting board
- Food Thermometer
- Saucepan
- Timer
- Lab notebook
- Measuring Spoon

# Procedure

1. Cut up four different types of lip balms into 6 equal pieces.
2. Weigh each sample of lip balm on weighing scale (grams)
3. Put 237 milliliters of water in a saucepan.
4. Boil water until at 97 degrees Celsius
5. Check temperature with food thermometer
6. Melt ingredients in saucepan until ingredients are liquid.
7. Time how long each lip balm brand melts.
8. Finally, repeat all steps five more times.

# Procedure (Continued)

**Independent Variable:** Type of Lip Balm (base)

**Dependent Variable:** The time it takes to melt.

**Controlled Variables:** The amount the researcher put in the bowl, the temperature of the water (97 degrees Celsius), the size of the bowl, the amount of water, the size of the saucepan, the weight of the Lip Balm Sample, the size of the weighing scale.

# Experimentation Photos



Lip Balms in the Container



Lip Balms before they were cut



Lip balms after they were cut

# Experimentation Photos



**Vaseline getting measured**



**Blistex getting measured**



**Palmer's getting measured**



# Experimentation Photos



LA Colors getting measured



Checking Temperature of Water



Lip Balm Melting

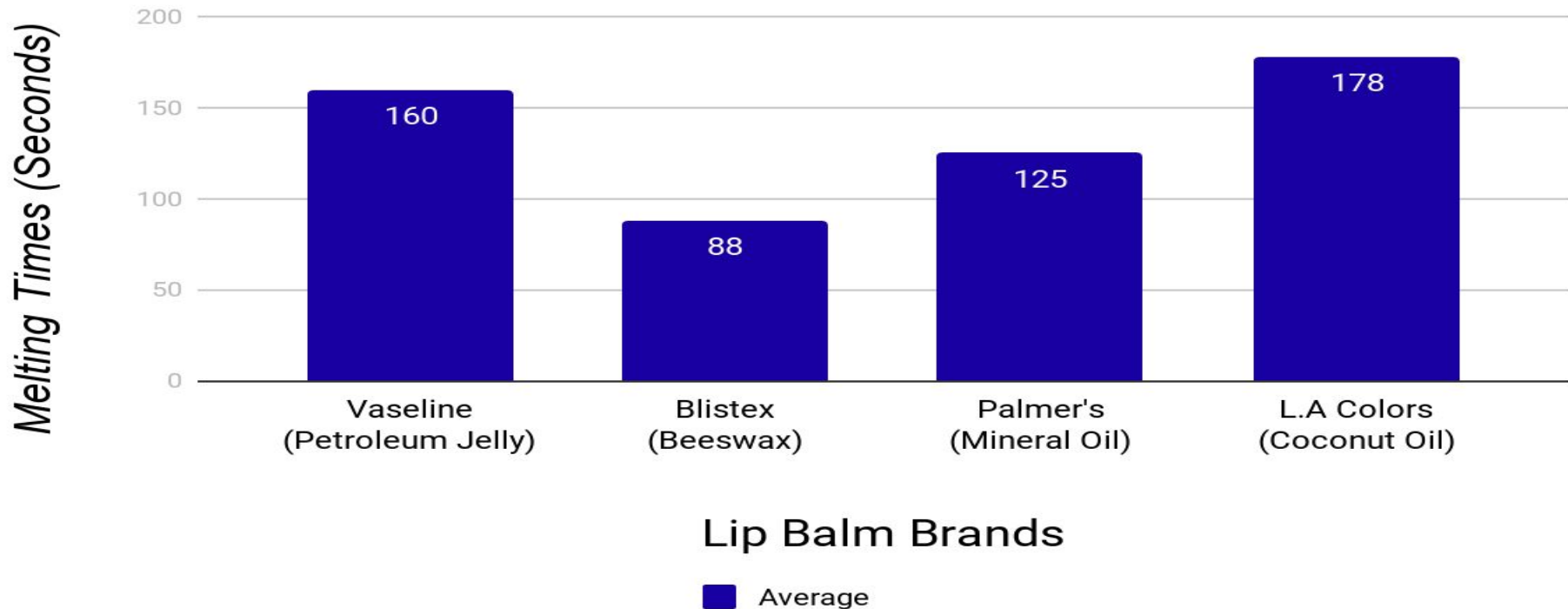


# Data Table

Type of Lip Balm	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5	Trial 6	Average
Vaseline	<b>219</b> seconds	<b>98</b> seconds	<b>135</b> seconds	<b>168</b> seconds	<b>188</b> seconds	<b>152</b> seconds	<b>160</b> seconds
Blistex	<b>100</b> seconds	<b>88</b> seconds	<b>88</b> seconds	<b>91</b> seconds	<b>71</b> seconds	<b>92</b> seconds	<b>88</b> seconds
Palmer's	<b>122</b> seconds	<b>118</b> seconds	<b>120</b> seconds	<b>136</b> seconds	<b>165</b> seconds	<b>93</b> seconds	<b>125</b> seconds
L.A Colors	<b>252</b> seconds	<b>131</b> seconds	<b>168</b> seconds	<b>182</b> seconds	<b>200</b> seconds	<b>140</b> seconds	<b>178</b> seconds

# Data Chart

## Average Lip Balm Melting Times



# Data Analysis

- Blistex melted the fastest out of all 4 lip balms
- Palmer's melted the 2nd fastest out of all 4 lip balms
- Vaseline melted the 3rd fastest
- L.A Colors melted the slowest out of all 4 lip balms
- Blistex melted the fastest out of all the lip balms.
- L.A colors melted the slowest out of the four lip balms.
- The difference is by 90 seconds.

# Conclusion

- **To answer the question:** Does the Ingredients of a Lip Balm Affect how fast it melts?
  - According to the data represented, the data does not support the hypothesis.
    - The researcher predicted that if you melt the lip balms at the same temperature, the the one with the least melting point will melt the fastest.

# Conclusion (Continued)

- **Benefits to Society**

- People could know at which temperature the lip balm will melt in the car
- Whether the ingredients of a lip balm affect how fast it melts

- **Suggestions for further research**

- How does the Ingredients of Lipstick Affect How fast it melts

# Conclusion (Continued)

- **Sources of Error**

- Coconut Oil melted the slowest instead of the fastest
  - The researcher predicts that this may be because of other ingredients in the lip balm that might have aided ingredients of the lip balm with the beeswax base.

- **If given a chance to repeat this project**

- I would increase sample size and would make my own lip balm with various bases