



HIGH ALTITUDE BAKING

Did you know that most recipes in a cookbook are written for sea level? Because of this, some recipes (especially baked goods) need adjustments to avoid poor results.

WHY DOES ALTITUDE MATTER?

At any altitude above sea level, the air pressure is lower. This lower air pressure can cause 3 major types of problems in your baked goods for elevations 3,500 feet above sea level.

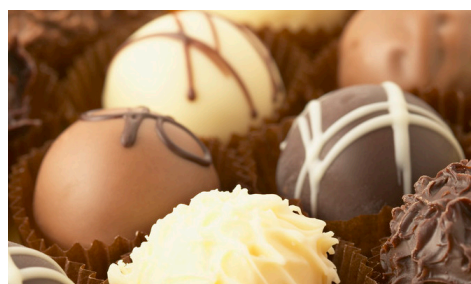
1. Lower air pressure allows baked foods to rise faster. Leavening agents such as yeast, baking powder and baking soda create large gas bubbles that expand rapidly. The large bubbles can weaken the structure of baked goods and cause cakes and breads to collapse unless recipe adjustments are made.
2. Water also boils at a lower temperature (2 degrees per 1,000 foot increase), which affects both baking and cooking
3. Liquids evaporate faster at high altitudes so foods such as cooked frostings and candies will become harder more rapidly.



CAKE ADJUSTMENTS:

If you don't adjust your sea level cake recipe you could have a coarse texture, batter flowing over the top of the pan, or a fallen cake. Often the proper recipe adjustments have to be worked out by trial and error using the suggestions in the table below as a starting point.

Ingredient	3,000 Feet	5,000 Feet	7,000 Feet
Liquid: add for each cup	1-2 Tbsp.	2-4 Tbsp.	3-4 Tbsp.
Baking powder: decrease for each teaspoon	1/8 teaspoon	1/8-1/4 teaspoon	1/4 teaspoon
Sugar: decrease for each cup	0-1 Tbsp.	0-2 Tbsp.	1-3 Tbsp.



CANDY & FROSTING ADJUSTMENTS:

When using a candy thermometer, remember that at high altitudes a sugar solution, like water, boils at a lower temperature. If sea level directions are followed, the syrup will be too concentrated by the time the prescribed temperature is reached, and the candy or frosting will be too hard. To determine how much you should reduce the final cooking temperature of the candy or frosting, follow these simple steps.

1. Put candy thermometer in boiling water for 10 minutes. Subtract the reading from 212 degrees. (The boiling point at sea level). If your thermometer reads 203 degrees, subtract this from 212-for a difference of 9 degrees.
2. Subtract this difference from the final cooking temperature of your recipe to determine the adjusted temperature or your altitude. If your sea level recipe says to cook to 246 degrees, subtract 9 degrees (from step 1) and you will have the correct adjusted temperature

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ANGEL FOOD & SPONGE CAKE: POPOVERS:



THE PROBLEM:

At higher elevations the amount of air beaten into the batter will expand to a larger volume causing your cake to fall. Therefore, less air is needed than at sea level.

THE SOLUTION:

Have egg whites at room temperature and beat them only until they form a peak that falls over-NOT STIFF AND DRY, which would cause your cake to collapse. You can further strengthen your cake structure by using less sugar and more flour as well as a higher baking temperature for less time.



THE PROBLEM:

At higher elevations recipes lose the steam too rapidly, both by expansion and evaporation, and turn out more like muffins-with out that nice crust.

THE SOLUTION:

Increase the amount of egg in the dough and reduce the fat (shortening or butter). This makes a stronger batter which will be able to retain the steam long enough for a nice crust to form. (You'll have to play around with your recipe to find the perfect ratio of adjustments)

BREAD:



THE PROBLEM:

At higher elevations breads rise faster and may become over fermented (sour flavored) or over proofed (rise too high) if you don't watch them carefully.

THE SOLUTION:

Allow dough to rise only until it is double in sized (go by size not time listed in the recipe for rising). If you're using a bread machine with a timed amount for rising decrease yeast by half. Flour also dries out faster at high altitudes, you may want to use less flour to compensate for this.

CAKE DOUGHNUTS:



THE PROBLEM:

At high elevations these are frequently cracked, too high in fat absorption, and too compact and dark.

THE SOLUTION:

Decrease the leavening (baking powder or baking soda), sugar and fat. Experiment to see what works best.

BISCUITS/MUFFINS/QUICK BREADS:



THE PROBLEM:

There isn't much of a difference-but if you feel there is you can try some ideas below.

THE SOLUTION:

Decrease baking soda and/or baking powder. Do not decrease soda beyond 1/2 t. for each cup of buttermilk used. Quick breads often need 2-4 Tbsp. additional flour and higher baking temperature.

COOKIES:



THE PROBLEM:

There isn't much of a difference-but if you feel there is you can try some ideas below.

THE SOLUTION:

Try increasing temperature about 20 degrees and slightly decrease the baking time. This will keep your cookies from drying out. For cake or bar type cookies, reduce the sugar by 3 Tbsp. per cup.