



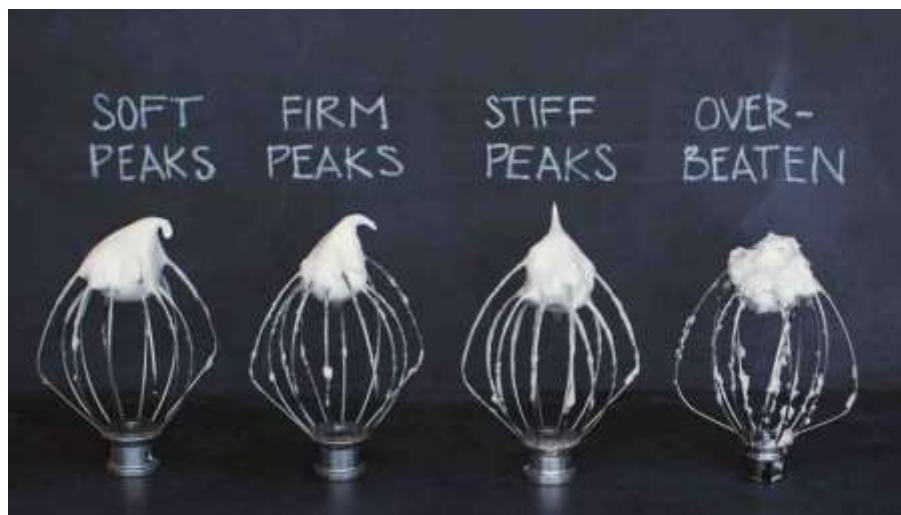
LEMON MERINGUE PIE - PART 3 IN A 6 PART SERIES ABOUT PIE



Lemon meringue pie doesn't use many ingredients available at Market (except eggs, of course!); I'm sharing about this pie because I have fond memories of my mom making it. She had a copper bowl she reserved just for whisking egg whites into fluffy foam. If you don't salivate at the sight of the golden tipped white peaks, then you surely will when you take your first bite of the tart, smooth custard topped with the fluffy, sweet meringue. Much like the [pecan pie](#) I talked about yesterday, baking this pie can get a little complicated. Lemon meringue exemplifies the idea that baking is both an art and a science.

Here is some of the science behind this beautiful pie:

An egg white is 90% water and 10% protein. These proteins are made of folded up chains of amino acids. When you whisk, you push air into the eggs, and this unfurls the amino acids. This process is called "denaturing" and it's when you alter the natural state of the egg. When the amino acids unfurl due to whisking, then the proteins stiffen. This is what stabilizes the air bubbles and creates foam. BUT, the eggs won't stay fluffy without a little help. This is where my mom's copper bowl comes into play. As you whip those eggs into a new shape, the whisk hits the bowl, sending ions of copper to mingle with the egg proteins. The copper and amino acids become more stable. If you don't do this, then your foam sweats and collapses. The bond you need to avoid is a disulfide bond. This is an extremely tight bond, which ends up so tight, in fact, that it will squeeze water out of the egg. That's what happens when your meringue starts to sweat (or leak), and then quickly collapse. [Click here for even more science related to cooking eggs.](#)



If you don't have access to a large copper bowl, you can also add an acid to help the egg whites stay firm. You can use 1/4 teaspoon lemon juice or white vinegar (per egg white). The recipe below calls for Cream of Tartar, which is potassium bitartrate, aka potassium hydrogen tartrate or tartaric acid, and you can find it between Cloves and Cumin on the spice aisle at the grocery store. Potassium bitartrate is a byproduct of making wine, formed when potassium and tartaric acid bond. It's found in the sediment left behind in barrels after the wine has been fermented. Vintners call these crystals "wine diamonds." You interact with Cream of Tartar more often than you may think. It's used to activate baking soda in order to make baking powder, it prevents sugar syrups from crystallizing, and it is added to table salt to prevent it from clumping.

The sugar in the meringue is not just to make it sweet. It also helps stabilize the egg whites. Egg whites can absorb the equivalent weight of sugar! But you can't just dump it in all at once or it will simply knock all the air out of the foam. Take half of the sugar you will be using, and whisk it in 1 tablespoon at a time, then use a spatula to fold in the second half of the sugar.



Lemon Meringue Pie

Ingredients for Sweetened Condensed Milk

- 2 cups whole milk
- 2/3 cup sugar
- 1/2 teaspoon pure vanilla extract

Ingredients for Graham Cracker Crust

- 9 graham crackers
- 1/4 cup lightly packed light brown sugar
- 6 tablespoons unsalted butter, melted

Ingredients for Lemon Custard

- 8 large egg yolks
- 1/4 cup cornstarch
- 2 teaspoons finely grated lemon zest
- 1 cup fresh lemon juice
- 4 tablespoons unsalted butter

Ingredients for Meringue

- 1 cup sugar
- 1/4 cup water
- 4 large egg whites
- 1/4 teaspoon cream of tartar

Preparation

1. In a small saucepan, combine the milk and sugar and bring to a simmer, whisking constantly, until the sugar dissolves.
2. Cook over very low heat (the mixture should not bubble), stirring occasionally, until thickened and reduced to 1 1/4 cups, about 2 hours and 30 minutes.
3. Stir in the vanilla and scrape the sweetened condensed milk into a medium bowl.
4. Meanwhile, in a food processor, pulse the graham crackers with the brown sugar until fine crumbs form. Add the butter and pulse until incorporated.
5. Press the crumbs evenly over the bottom and up the side of a 9-inch glass pie plate to form a 1/2-inch-thick crust; use the bottom of a metal measuring cup to help form an even layer of crumbs. Refrigerate the crust for at least 45 minutes.
6. Preheat the oven to 350°. Bake the crust for about 12 minutes, until fragrant and browned. Transfer to a rack and let cool completely.
7. Now, in a medium bowl, beat the egg yolks.
8. In a medium saucepan, whisk the sweetened condensed milk with the cornstarch until well blended.
9. Add the lemon zest and lemon juice and bring to a simmer. Cook over moderately low heat, whisking, until thickened, 1 to 2 minutes.
10. While whisking constantly, slowly drizzle half of the milk mixture into the egg yolks.

11. Add the egg yolk mixture to the saucepan and cook over moderately low heat, whisking, until very thick, about 3 minutes.
12. Whisk in the butter until smooth. Pour the custard into the crust and let cool to room temperature.
13. Preheat the oven to 325°. In a medium saucepan, combine the sugar and water and bring to a boil. Cook over moderate heat until the syrup reaches 243° on a candy thermometer, 8 to 10 minutes.
14. Meanwhile, in the bowl of a stand mixer fitted with the whisk, beat the egg whites with the cream of tartar at medium speed until soft peaks form.
15. With the machine on, slowly drizzle in the hot syrup and beat the meringue at medium-high speed until stiff and glossy, about 10 minutes.
16. Scoop the meringue onto the pie, spreading and swirling it decoratively; make sure the meringue covers the filling completely and touches the crust all around.
17. Bake the pie on the middle rack of the oven for 10 minutes
18. Turn on the broiler; broil the meringue 6 inches from the heat until golden brown in spots, about 3 minutes (or use a blowtorch).
19. Transfer the pie to a wire rack to cool completely. Refrigerate until chilled, 3 hours.

Note: The pie can be made 8 hours ahead.