

recipe redux

Sponge Cake Napoleon

By Walter Zuromski, CEC, CCE

Classically, a Napoleon—as it’s known in the United States—is alternating layers of crispy puff pastry and egg-rich pastry cream finished with fondant icing and chocolate lace decoration. In France, it’s known as *mille-feuille*, and in Italy is dubbed *mille foglie*. Our Napoleon uses alternating layers of sponge cake and pastry cream, and the manufacturable version is freeze/thaw-stable with comparable culinary integrity to fresh.

The recipe calls for vanilla pastry cream. The big difference in our gold-standard pastry cream recipe compared to the traditional *crème anglaise* is addition of corn starch, which gave it a pudding-like viscosity and texture.

The key to a successful sponge cake is proper aeration, primarily with eggs and sugar. Eggs further aid with the suspension of ingredients, crumb color and flavor of the finished cake.

While frozen pasteurized liquid eggs are certainly an option for the scaled-up, plant-ready pastry cream formula, we sought a raw material that would be very easy to store. Dry egg products require less storage space than liquid egg products, and they’re more cost-effective to ship. They’re also less susceptible to bacterial growth during storage. Furthermore, dried eggs deliver enhanced control over the amount of water used in the formulation. Making the pastry cream freeze/thaw-stable also required replacing the corn starch with modified tapioca starch. This produced a thick, pumpable, stable pastry cream.

We also used dry egg products in the plant-friendly sponge cake. With just the right ratio of water to egg powder, you can get the same functionality in a sponge cake made with liquid eggs. But we found that not all dry egg products are the same. The initial dried whole-egg product used didn’t hold onto the desired air volume. So I turned to the egg experts to gain a further insight and discovered that our dried whole eggs needed to be co-dried with carbohydrate (CHO, 10% sugar or corn syrup). Addition of sugar or corn syrup prior to drying protects the proteins and greatly improves foaming properties. Replacing the corn starch with a low level of xanthan gum helped the cake retain moisture through freeze/thaw.

The finished plant version was a light, airy sponge cake layered with the pastry cream, with the convenience of frozen distribution and storage that doesn’t compromise culinary integrity. ●



Photo:
American Egg Board

Recipe:

Ingredients:

Pastry Cream

- 2 cups milk
- ½ cup sugar
- 1 egg
- 2 egg yolks
- 3 tablespoons corn starch
- 1 tablespoon butter
- 1½ teaspoons vanilla extract

Sponge Cake

- 12 eggs
- 2 cups sugar
- 1½ cups cake flour
- ½ cup corn starch
- ½ cup plus ¾ teaspoon butter, melted

Procedure: For the pastry cream, add milk to a medium saucepan. Add half of the sugar and bring to a boil, stirring occasionally. In a medium bowl, whisk the whole eggs and yolks with the corn starch and remaining sugar until thoroughly blended. Gradually add the hot milk to the egg mixture to temper it. Return mixture to saucepan and bring to just under a boil (approximately 180°F). Add the butter and whisk to incorporate. Then whisk in the vanilla. Pour the cooked pastry cream into a half-sheet tray lined with clear wrap, cover and refrigerate until fully cooled. For the sponge cake, blend the eggs and sugar in a mixing bowl and place over a double boiler. Lightly whisk continuously until it reaches 110°F. Place this mixture into a mixer with the whisk attachment and mix at high speed for 10 minutes or until the mixture reaches maximum volume and it begins to recede in volume. Reduce the speed to low and whip for an additional 10 minutes. Combine and sift flour and corn starch at least twice; fold into the beaten egg-sugar mixture. Melt butter in a saucepan and fold into the mixture. Portion batter into sheet pans lined with parchment paper, sprayed with nonstick spray and lightly dusted with flour. Bake at 375°F for 20 minutes. Cool completely on wire racks. Cut the sponge cake sheets into squares or use a teardrop cutter. Add a layer of pastry cream, another layer of cake, another layer of filling, another layer of cake and top with cream. *Optional:* Coat with apricot glaze, garnish with a whip-cream swirl, and serve with fresh berries.

Formula:

Ingredients.....% by Weight Pastry Cream

Water	66.13
Sugar, granulated.....	15.38
Milk solids, nonfat, dry.....	6.15
Tapioca starch, modified.....	5.77
Whole-egg solids, dry.....	1.92
Butter	1.92
Egg-yolk solids, dry.....	1.77
Vanilla extract	0.96

Total:..... 100.00

Sponge Cake

Sugar, granulated.....	32.20
Water	29.43
Cake flour.....	18.40
Whole-egg solids, CHO.....	10.73
Melted butter.....	7.67
Milk solids, nonfat, dry.....	1.38
Xanthan gum	0.19

Total:..... 100.00

Procedure: For the pastry cream, combine all dry ingredients in a ribbon blender and mix well. In a kettle with a high-shear mixer, add water and dry ingredients slowly, while mixing at medium shear, to fully incorporate and hydrate. Heat to 180°F. Add butter and vanilla, and turn the heat off. Continue to mix during the cooling, set to 40°F. Pump into holding tank. Keep cool at 40°F. For the sponge cake, blend dry eggs, sugar and xanthan gum to form a dry mix blend. Place this into a spiral mixer and blend well on low. Preheat the water to 130°F, shut off heat and pour into the dry ingredients to fully hydrate. Mix on high speed to incorporate air volume to three times existing volume (should take 12 to 20 minutes); lower the speed to medium halfway through this process to decrease the volume by one-third. Add the cake flour and milk solids using the low-speed folding setting. Add melted butter and incorporate well. Pump batter into sheet pans at 6 lbs. per pan. Place into linear, one-stage impingement oven set at 375°F with belt speed set to 20 minutes. Cool to 65°F and then blast-freeze. Cut cake to specifications. *Method of assembly:* Cake is cut into three layers and put through a die cut, such as a teardrop shape. Formed-plastic teardrop-shaped sheet packaging is used to assemble the napoleon layers. With a linear pumping system and moving line, the cake layers are placed in the sheet packaging and pastry cream is pumped, 1 oz. of filling per layer with 1.5 oz. on top. The trays are cellophane-wrapped and put into a spiral freezing system. *End user:* Slack in refrigerator overnight and serve. *Optional:* Coat the top with apricot glaze, garnish with a whip-cream swirl, and serve with fresh berries.