Guide to Cake Donuts

Making Cake Donuts - Questions and Answers

Q. What is the correct dough temperature?
A. Between 66°F and 70°F. Regulate by using water of proper temperature. See "Calculating Proper Water Temperature" on other side.

Q. What happens if the dough is too warm?
A. The donuts will absorb shortening, lack volume, and may be misshapen.

Q. What happens if the dough is too cold?
A. The donuts stand under the shortening too long; they fry too slowly and tend to either crack open or to form ball donuts; they absorb excess shortening and lose volume.

Q. Why is floor time recommended?
A. A 10 to 15 minute rest period between mixing and cutting permits the dry ingredients to take up the water and helps produce donuts of good volume and proper shortening penetration.

Q. What happens if the floor time is too long?
A. There are no ill effects unless it is extended beyond 30 minutes.

Q. What happens if the floor time is too short?
A. The donuts will have less volume than they should and may be slightly tough.

Q. What is the correct shortening temperature for frying?
A. Best results usually are obtained from 370°F to 380°F.

Q. What happens if the shortening temperature is too high?
A. The donut fries too fast on the outside, proper expansion is prevented, volume will be subnormal and the interior crumb may be close. In extreme cases, the centers may be raw.

Q. What happens if the shortening temperature is too low?
A. The donut spreads too rapidly, forms large rings and tends to crack open. The crust color will be light and the shortening absorption high.

Q. What happens when the shortening level is too far below the cutter?
A. Donuts are apt to turn over while submerging or surfacing. This may produce cracked or rough crusted donuts. The distance from cutter to shortening should be 1-2 inches for machine cut donuts.

Q. How far should the frying screen be below the shortening surface?
A. In hand cut operations, the depth is not relevant as long as donuts can submerge. In machine cut operations, the screen should be set at 2-4 inches to allow donuts to rise without turning over. If donuts are turning over, the screen must be raised.

Q. What happens when the screen is too near the surface?
A. The dough may stick on the screen and delay in rising. This in turn may result in a heavily crusted or cracked donut that's low in volume and screen marked.

Q. What happens when the screen is too deep in the shortening?
A. The donut frequently turns over when rising, resulting in cracked and crippled donuts.

Q. What prevents donuts from sticking to the screens in open kettle frying?
A. In hand cut operations, donuts may stick to unclean screens. If sugar, jelly or other adherents caramelize on screens, submerged dontus will not release properly. Clean carbonized or dirty screens with a nylon brush and a mild solution of hot water and soap to remove all adhering material to which the dough might stick. Completely dry and dip screens in shortening before using.

Continued

Making Cake Donuts - Continued

Q. Can shortening absorption be too low?
A. Yes. Shortening absorption can be too low and may result in donuts with poor keeping qualities. Donuts should absorb between 1 1/2 and 3 ounces of frying shortening per dozen depending on their weight.

Q. How can excess shortening absorption be prevented?
A. This can be reduced by allowing proper floor time, increasing mixing time, adjusting dough and/or shortening, and turning the donuts promptly when they have taken on a golden brown color. Do not overfry them on the first side.

Q. How long should a cake donut be fried per side?
A. Approximately 60 seconds per side for a 2 ounce donut, adjust frying time to size.

Q. What are some signs of breaking down of shortening?
A. Foaming, excessive absorption, off-flavor.

Q. How often should a fryer be filtered and totally boiled out?
A. A fryer should be drained and filtered at least once a week with a filter machine; at least once a year the shortening should be changed and the fryer boiled out with water and a boil out compound. Be sure to pack new grease under and around heat tubes.

Trouble Shooting for Cake Donuts

Lack of Volume

Causes
1. Shortening too hot.
2. Overmixing.
3. Dough too stiff.
4. Water too warm.
5. Donuts on rack too long before frying -- hand cut.
6. Insufficient floor time -- machine cut.
7. Center not cooked.
8. Donuts rolled too thin.

Remedies
1. Check thermostat and shortening for proper temperature with appropriate shortening.
2. Check mixing instructions.
3. Make dough softer.
4. Ideal dough temperature is 70°F. See **"Calculating Proper Water Temperature"** below.
5. Keep floor time before frying to 12-15 minutes.
6. Keep floor time before dropping to 10-15 minutes.
7. Dough too tough or shortening too hot -- check frying temperature and mixing, fry longer.
8. Roll dough thicker and give good shrink on bench.

Donuts Flat/High Shortening Absorption

Causes
1. Undermixed.
2. Shortening too cold.
3. Dirty Shortening.
4. Shortening broken down.
5. Dough too soft.
6. Large cracks.
7. Poor color.

Remedies
1. Check mixing instructions.
2. Check thermostat and shortening for proper temperature.
3. Keep shortening clean at all times.
4. Complete change to all new shortening.
5. Cut back on water to get proper consistency.
6. Turn donuts faster or check shortening temperature which might be too cold.
7. Check temperature of shortening as donut may be frying too slow.

Other

Problem
1. Balling.
2. Toughness.
3. Flat (ringed out).
4. Misshapen, crippled.
5. Rough, thick crust.
6. Cracking on break side.
7. Excess shortening absorption.

Remedies
1. Not enough water; cold batter temperature; donuts turned too soon; too much batter dropped for size of cutter; donuts dropped too deep in shortening.
2. Overmixing.
3. Too much water; cold frying temperature; donuts turned too late; cutter (excessive overlap, cutter damaged or worn, cutter too high over surface).
4. Not enough water; screen too deep in shortening; cutter (excessive overlap, too low--touching shortening).
5. Not enough water; under-mixing; hot frying temperature; too much frying; cutter (damaged or worn, too high over surface, too low -- touching shortening).
6. Not enough water; under-mixing, cold batter temperatulre; cutter (damaged or worn, too high over surface).
7. Under-mixing; cold or hot batter temperature, cold frying temperature, too much frying.

Calculating Proper Water Temperature

Cake Donut Mix (Example) Ideal Dough Temperature: 70ºF

1. Measure:	Room Temperature (R.T.)	75ºF
2. Measure:	Flour Temperature	+ 70ºF
3. Add:	(F.T.) R.T.+ F.T.	=145ºF
4. Add:	Friction Factor (F.F.) (friction from mixing)	+ 5ºF
5. Total:	R.T.+ F.T.+ F.F.	=150ºF
6. Multiply:	Ideal Dough Temperature (70ºF) x3	=210ºF
7. Subtract:	Total (R.T. + F.T.+ F.F.)	- 150ºF
8. Gives You:	***Proper Water Temperature***	***= 60ºF***

Guide to Yeast Raised Donuts

Making Yeast Raised Donuts -- Questions and Answers

Q. What is the correct dough temperature?
A. About 82°F is best for a small dough. For large dough and/or a warm shop, use about 80°F to 82°F. (84°F to 86°F for instant yeast.). See "Calculating Proper Water Temperature" on the next page.

Q. What happens if the dough is too warm?
A. The dough will ferment too fast and will tend to over-proof, giving an old dough look and crippled donuts that soak up too much shortening. These donuts may collapse after proofing. The grain and texture will be coarse.

Q. What happens if the dough is too cold?
A. The dough will ferment too slowly and will tend to give round or under-proofed donuts which do not have desired expansion and proper grain and texture.

Q. How is yeast added to the dough?
A. Dissolve the yeast in a small amount of water or crumble directly into the mixing bowl. Do not use water above 90°F. Instant dry yeast should be added after dough comes together.

Q. How should dough be mixed by machine?
A. Place water, mix and yeast in a machine bowl. Mix until dough is smooth, pliable and dry to feel. When fully mixed, the dough should come away cleanly from the side of the mixing bowl.

Q. Is it necessary to change this procedure for large batches?
A. Under some conditions, it may be desirable to mix slightly longer in order to obtain a smooth and elastic dough.

How is dough mixed by hand?
Q.
A. Place about three-fourths of the mix in a large bowl. Pour in the yeast solution and water at the proper temperature. Mix until dough is smooth and free from lumps. Add the remaining mix and work to a smooth dough. Do not be afraid of overmixing. See "Calculating Proper Water Temperature" on the next page.

Q. How long should dough be fermented and how do you know when it's ready?
A. The dough may be fermented in the mixing bowl, or machine bowl, if a regular dough room or trough is not available for 45 minutes to 1 hour. Be sure to protect dough from drafts by covering dough with a cloth. Use a constant temperature room at 80°F to 85°F with sufficient humidity to prevent crusting of the doughs. The dough is fermented when it is two to three times its original bulk. Usually the dough will recede when slight pressure is applied to the top center area of the dough.

Q. What special precautions should be observed when rolling the dough?
A. Avoid excess dusting flour. Brush flour off of dough before proofing. Raw flour on the surface of donuts affects the frying shortening adversely. Roll small doughs on a slightly dusted bench cloth. Do not rupture dough surface.

Q. How should the donut be proofed?
A. The dough should be proofed in 90°F to 100°F with a relative humidity of 60-65%.

Q. How long should a yeast raised donut be fried per side?
A. A yeast raised donut should be fried approximately 45 seconds per side for a 1 1/2 ounce donut. Adjust frying time according to size.

Continued

Making Yeast Raised Donuts -- Continued

Trouble Shooting for Yeast Raised Donuts

High Shortening Absorption

Causes	*Remedies*
1. Dough too soft.	1. Check for proper amount of water and proper water temperature. See **"Calculating Proper Water Temperature"** below.
2. Dough underdeveloped.	2. Check for proper mixing requirements.
3. Dough too dry.	3. Add a little more water.
4. Shortening too cold.	4. Check thermostat and shortening for proper temperature (shortening temperature should be 375°F).
5. Dirty shortening.	5. Keep shortening clean at all times.
6. Shortening broken down.	6. Complete change to all new shortening.
7. Overproofing in proof box.	7. Check proof box heat and/or cut down proofing time.
8. Frying donuts wet out of proof box.	8. Let donuts dry on the floor 5-10 minutes.

Other

Problem	*Causes*
1. Toughness.	1. Underproofing; young dough; undermixing; wet proofing.
2. Excess shortening absorption.	2. Overproofing; old dough; undermixing; wet proofing.
3. Shrinkage.	3. Overproofing; old dough; undermixing.
4. Lack of volume.	4. Cold dough temperature; underproofing; young dough; undermixing.
5. Blistering.	5. Cold dough temperature; crusted dough; too much water; underproofing; young dough; undermixing.
6. Open grain (coarse).	6. Too much water; overproofing; old dough.
7. Pale crust.	7. Overproofing; old dough; cold frying temperature (frying temperature should be 375°F).
8. Dark crust.	8. Underproofing; young dough; hot frying temperature (frying temperature should be 375°F); overfrying.
9. Collapsing.	9. Cold frying temperature; too much water; under and over proofing; young dough; undermixing; wet proofing; cold draft.

Calculating Proper Water Temperature

Yeast Raised Donut Mix (Example) Ideal Dough Temperature: 80ºF

1. Measure:	Room Temperature (R.T.)	75ºF
2. Measure:	Flour Temperature (F.T.)	+ 70ºF
3. Add:	R.T.+ F.T.	= 145ºF
4. Add:	Friction Factor (F.F.) (friction from mixing)	+ 35ºF
5. Total:	R.T.+ F.T. + F.F.	= 180ºF
6. Multiply:	Ideal Dough Temperature (80ºF) x 3	= 240ºF
7. Subtract:	Total (R.T. + F.T. + F.F.)	- 180ºF
8. Gives You:	***Proper Water Temperature***	***= 60ºF***

Steps for Successful Donut-Making

1. Make honey glaze, icings, cinnamon sugar, etc. in advance.
2. Light fryer; turn on heat in proof box at start of donut making.
3. Mix a batch of yeast raised dough.
4. Make a batch of cake donuts; the size of the batch should be only what you can finish before the yeast raised dough is ready.
5. Make up yeast dough into desired varieties; proof and fry.
6. Glaze donuts when hot.
7. Fill and sugar donuts when cold.