Deep frying involves fully immersing food in hot oil. It is an extremely fast cooking method, and, despite the use of liquid oil, is best classified as a dry cooking method because it does not involve liquid water.

With a deep fat fryer, deep frying is reasonably safe, but hot cooking oil is intrinsically dangerous, and one should be very careful so as to avoid fires and/or severe burns.

Method

Deep frying does not actually make the food greasy if it is done properly. The water in the food repels the oil. However, the hot oil also boils the water within the food, and steams the food from the inside out. As long as the oil is hot enough and the food is not immersed in the oil for too long, no oil will enter the food itself. If the food stays in the oil too long, the water will steam out and the oil will penetrate the food. If the oil is too cool, the food won't be done before this happens.

Most fried recipes rely on either a coating of batter or breading, or on foods that have or produce a natural skin around the food such as potatoes or whole poultry with the skin on. The effect of this is that the outside of the food becomes crispy and browned while the inside is tender, moist, and steamed, similar to searing. Of course, the batter can absorb huge amounts of fat and is usually consumed along with the food, causing the total fat content ingested to increase tremendously.

Safety

Chip pans can be dangerous, and are a leading cause of kitchen fires; this demonstrates a simulation of a chip pan fire.

Chip pans

Chip pans can be dangerous and should only be used with caution and when continuously supervised, preferably with a thermometer; deep fryers are safer. Chip pans are the leading cause of house fires in the UK, and further, may spill hot oil, causing severe burns. If you have a chip pan, your local fire brigade may offer to trade it in for a deep fryer, or can otherwise advise about the dangers.

Safety tips

deep fryer, not pan

Deep fryers are less likely to tip than chip pans (avoiding scalding oil), and generally have thermometers to prevent overheating and fires. Familiarizing yourself with operation prior to use is also prudent.

no water in oil

Water in hot oil cause splatters and fires – it sinks (being denser than oil), then vaporizes, splattering hot oil and possibly scalding. If the oil is on fire, this can cause a chip pan fire (boilover) – a fireball of burning oil ejects from the fryer, posing extreme hazard. In case of fire, do not use water; see below instead.

fire blanket or suitable extinguisher

Have a fire blanket immediately to hand, to smother fires, or a specialized fire extinguisher marked for cooking oil fires (class K in the US, class F in Europe).

proper oil

Some oil is not suited for deep frying, smoking at frying temperatures. Suitable oils include refined safflower oil, refined sunflower oils, refined peanut oil, coconut oil (South Asia), and rice bran oil (East Asia).

do not overheat

Oil is flammable and oil fires are extremely dangerous; before burning, oil will smoke, providing a warning. Most often, one deep fries between 175 and 190 °C (345–375 °F).

do not overfill

There must be space in the fryer for food to be added – use the recommended amount of oil, and small quantities of food. If there is too much oil or food, oil can flow over the sides, causing fire or burns. Further, small quantities of food cook better.

use utensils

Use metal utensils to manipulate food in a fryer – a wire cage is the main tool, and a spider or long-handled chopsticks can be used for additional manipulation.

metal range hood

Cook under a metal range hood: flames from burning hot oil can be 2 or 3 feet high, and can easily burn shelving.

cool after use

After use, allow the oil to cool for 2 hours before handling.

General cooking advice that particularly applies:

do not leave unattended

do not drink alcohol

no children present

wear tight, thick clothes

Wear tight-fitting, long-sleeved, thick clothes to prevent burns from splatters, such as mechanics’ shirts and denim, rather than loose, thin clothes such as saris.

In case of smoke

When the oil starts to give off continuous smoke, you have it far too hot – it is at the smoke point, and the oil becomes carcinogenic at this point.

Turn off your deep fryer, and allow the oil to cool.

It is likely not acutely dangerous – the fire point and kindling point are generally significantly higher than the smoke point, so the oil will not ignite without further heating – but it is extremely hot, and smoke is a warning sign.

Next time, use a lower temperature setting or choose an oil with a higher smoke point.

In case of fire

In case of fire, call the fire department immediately.

Cooking oil fires are extremely dangerous and hard to fight, requiring special measures:

Burning oil can only be adequately fought with a fire blanket, or specialized fire extinguisher (Class K in the US; Class F in Europe); these may not be available for residential use.

Water should never be used on an oil fire; neither should regular fire extinguishers.

If no fire blanket or suitable extinguisher is available, and the fire is small and contained, try quickly adding baking soda as this can quench it (do not add any other substances, which may burn instead). However, in the case of a large cooking oil fire, leave the house and contact the fire department immediately, and do not try to fight it yourself – your efforts are liable to end in disaster.

Frying whole poultry

A whole turkey is sometimes deep fried during a regional holiday in the United States; one may also wish to deep fry a chicken or other bird. In general, cutting up the bird (or buying it pre-cut) and frying individual pieces is significantly easier and safer; it also makes service easier.

If you wish to deep fry a turkey, please contact your fire department before doing so, so that you do not need to contact them urgently after doing so.

The main advice is:

All usual advice, with extra care.

Use a specialized turkey fryer, because it is large.

Carefully measure oil required beforehand, with the actual bird, to ensure that the fryer is not over-filled.

Cook outside.

Thaw the bird before deep-frying; advice which deserves to be in bold or caps.

Tips for frying

Generally, cook small pieces briefly at high temperatures to get crisp but not greasy food.

Dry food before frying (to avoid splatters), especially soaked potatoes; remove ice crystals from frozen food.

Foods flavor the oil after use; thus, cook light-flavored food (vegetables) before heavy-flavored foods (fish, shrimp) – or alternatively, use separate fryers for different foods.

Starting with cold foods (good idea), generally frying temperatures are around 325–375 degrees Fahrenheit (160–190 degrees Celsius). It may be higher for small foods. If the oil is too hot, the outside will burn before the inside is done.

When starting with warm or hot foods, the oil can be much hotter. (this is why the egg roll recipe instructs you to use hot filling, and why the fried fish recipe instructs you to microwave the fish before breading and deep-fat frying it)

Don't add too much food at one time; it will cool the oil too much.

Do not use a basket with food which could stick to the wires. Alternatively, suspend food in oil with tongs for ten seconds before releasing.

Consider using deep frying as one step in cooking, to crisp the outside only – similar to broiling or pan-searing. For instance, rather than deep frying chicken from raw to cooked, first roast it, then only finish it in the fryer. Similarly, you may deep fry potatoes as one step in making roast potatoes – after parboiling, and either before or after roasting.

Breading

When breading with a dry powder, use an egg wash or viscous liquid (such as buttermilk) to make it stick to the food.

When breading with a moist batter, use cornmeal, cornstarch or flour to make it stick to the food, and make sure batter is sufficiently dry on adding.

Shake off excess batter or breading before frying; otherwise it will come off in the oil, requiring more frequent oil changes.

Some recommend refrigerating breaded food for a ½ hour before frying, so that the breading sticks better.

Adding too much food to the fryer not only cools the temperture of the oil, it also causes your food to start to produce steam from overcrowding the fryer, and lowers the temperature, this will result in soogy foods and breading falling off the product.

Re-using oil

Opinions differ regarding re-use of oil, and the storage of used frying oil.

Some say frying improves with repeated use of the oil and use one batch of oil for three to six fryings, while others claim used oils are hazardous either due to bacterial growth or due to the breakdown of the oil into harmful compounds.

Those who reuse oil disagree as to whether refrigeration is necessary, but generally agree that it is important to filter the oil and then store it tightly capped and away from light.

Discard reused oil when it becomes dark or begins to smell "off".

If reusing oil, add fresh oil for each use in order to extend its usefulness.

Filter your frying oil regularly, if your fryer has a filtering system.

Cooled oil can be filtered with a tea strainer, kitchen paper, muslin or coarse coffee machine filter paper.

Change the oil when it becomes extremely dark. If you don't, your food will all taste the same – fries will taste like fish, fish will taste like fries, and, in the end, everything will taste a bit rancid.

A rule of thumb is to change oil each week under heavy use, or every three weeks if it's only used for frying vegetables.

When using new oil in your fryer, add an extra 1.5 minutes to your frying time.

Oil can be purified by deep-frying parsley. The parsley absorbs the odors in the oil. Watch for spatters!

Oil disposal

At some point, oil must be disposed of. Suggestions include:

Re-use oil for non-deep frying (stores airtight in fridge for months; discard when rancid).

Dispose at local restaurant, after asking – they often will have cooking oil recycling (into biodiesel or other substances).

Store (after cooling!) in the original container, milk containers, beer or wine bottles, wide-mouth jars (yogurt, mayonnaise, pickles), and dispose of these, optionally wrapped.

Use solid fats (lard, coconut oil, Crisco) and allow it to solidify and cool.

There is a Japanese “oil solidifier” which will solidify oils, making disposal easier.

Check with local sanitation on proper disposal.

However, do not dispose down drain, this is illegal in some locations as it can clog pipes and sewers problems and ultimately contribute to decreases the performance of the water treatment plants.

Serving suggestions

Serve deep fried food immediately, or keep warm in oven (95°C, 200°F) in a pan (properly, a jelly roll pan – a raised edge)

Drain on paper

Salt immediately, while hot; optionally pepper or use other spices as well.

Dipping sauce is often desirable.

A wedge of lemon is also tasty.

Contrast textures – deep fried food (such as seafood or croûtons) on salad are a classic combination, and tempura in soup is common in Japan

Forks, chopsticks, and hands are generally the easiest way to eat (due to crust); provide napkins if hands are to be used.

Drinks-wise, beer, black tea, and soft drinks often pair well; big (tannic) red wines can also work.

Health

Some health concerns exist regarding deep frying; some are misconceptions, some are contentious, and some are well-founded. In brief, properly deep frying yields food that is crisp, not greasy, and is little different from other frying such as pan-frying. Ultimately, ingredients are fundamental: deep-fried leek is still leek, while a deep-fried Mars bar is still a Mars bar.

Tips

Use appropriate oil (high temperature oil), at appropriate temperature (well below smoke point).

Cook small pieces, briefly, at high heat.

If it stops making sound, it’s over-cooking.

Either filter oil or use new oil each time.

Criticism

The following are the general criticisms leveled at deep frying:

Fat is bad (and deep frying is fatty)

The image of a vat of oil is shocking and disturbing to some, as though one is going to consume that oil; this fear is largely baseless.

The oil is used to heat, and very little is actually consumed. A simple test of this is to inspect the level of oil before and after cooking – it should be almost identical, reflecting that almost all the oil is still in the vat, not in the food. Simply, the hot oil heats the food and steams it from the inside (steaming is generally considered healthy cooking), as reflected in the sound of steam escaping during cooking; the steam keeps the fat out.

This is not the case for potatoes, where one intends fat to enter, and hence blanches the potatoes beforehand.

Pan-frying and stir-frying involve similar coatings of fat, but are less visually striking.

Further, the proposition that "fat is bad" is contentious, and rejected by many – compare low-fat and low-carb diets.

Lastly, the oils used in deep frying (mostly monounsaturated vegetable oils) are general highly praised.

Deep frying creates toxins

There is some basis for this concern – using unrefined oils or oils with low smoke points and raising them to the smoke point causes production of carcinogens via oxidation, as reflected in smoking. This is reduced, if not eliminated, by using refined oils with high smoke points. There are suggestions that toxins are produced below the smoke point, and particularly if oil is reused or kept hot for extended periods – this leads to the suggestion that oil not be reused. Further, pieces of food that fall into oil are themselves impurities and may oxidize on further cooking – this leads to the suggestion that reused oil be filtered.

Deep frying destroys nutrients

Deep frying is similar to other cooking in nutrient destruction, because the interior is not touched by oil, just heated (steamed, in fact). Cooking destroys some nutrients, while making others easier to digest.

Deep frying does not provide nutrients

There is some basis for this – Essential Fatty Acids (EFAs) are destroyed by deep frying, and must be obtained from other sources – deep fried food should not be one’s only source of fat.

Commonly deep fried foods

Virtually any food can in principle be deep fried. Certain classes of food are frequently deep fried:

Meat:

Seafood – shrimp, squid, clams, scallops, oysters

Poultry – chicken, turkey (as parts or whole)

White fish – fish & chips

Vegetables:

Potatoes – fries (chips), chips (crisps)

Allium (onion family) – onions, leeks

Green vegetables

Bread and dough:

Bread-wrapped – dumplings, egg rolls, empanadas, samosas

Dough – fried dough

Bread/starch – croutons, fried bread sticks, tortilla chips, fried noodles

Other:

Minced mixtures – croquettes, crab cakes

Fat – Cheese, Pork skin

Mushrooms

General categories include fritters and tempura.

More unusually:

Candy bars – Twinkies, Mars Bars

Fast food – Hot dogs, Pizza

Icecream

Red meat (beef, lamb) and fatty fish (salmon) are generally not deep fried, however.