



Culinary Review - Thickeners

Starch Thickeners

Many of the foods and methods of preparation discussed will include soups, sauces and gravies. Many of these food variations will need thickening. Following are properties and guidelines for producing quality thickeners.

Starches are probably the most common and most useful thickener used in the making of sauces. Flour contains starch and is the most commonly used thickener. The thickening power of flour varies depending on the amount of starch it contains. Bread and all-purpose flours contain less starch than cake flours. Most kitchens and recipes use bread or all purpose flour. If the flour called for is different and you would like to make an adjustment, you can. Eight ounces of cake flour has the same thickening power as 10 ounces of bread flour.

Other starch thickeners also are used. These include cornstarch, arrowroot, waxy maize, instant starch, breadcrumbs and potato and rice flour.

Starches thicken by gelatinization. In this process, starch molecules absorb water and swell.

Note: Acids inhibit gelatinization, so, to best enhance the sauce or soup flavors, add acids after the sauce or soup has finished thickening.

To get starches to work properly, without lumping, when adding them to hot liquids, their granules must first be separated. There are a couple of methods you can use to do this.

- ❖ Mix the starch with fat, either hot, as with a roux, or cold as in a *buerre manie* (raw butter-flour mixture).
- ❖ Mix the starch with a cold liquid as with cornstarch or arrowroot. This mixture is called slurry. This is not usually done with flour because it makes an inferior sauce.

Roux

To separate the starch granules when using flour, it is best to use fat. The most common way to do this is to prepare a roux. A roux is a cooked mixture of equal parts (by weight) of fat and flour.

Roux is generally prepared using clarified butter, margarine, lard or vegetable shortening or oil. Clarified butter is the best because it adds a wonderful flavor to foods, while vegetable oils and shortenings add no flavor and can leave that "fuzzy and grainy" cold oil taste.

Roux thickened sauces are losing their popularity because of the higher fat content they can add to foods.

Preparing a Roux

When making a roux, it is important that you use the correct proportions of fat to flour. There should be just enough fat to coat the starch granules, but no more. Personal chefs can tell when this is accomplished just from the look and feel of the roux. The standard ratio of fat to flour is 1 to 1 by weight, but Escoffier calls for 8 ounces of fat to 9 ounces of flour.

A good roux should be smooth and slightly stiff. It should not be runny or pourable.

Roux that has too much fat is called a slack roux. This not only adds cost to your product, but the excess fat will come to the top of the sauce where it must be skimmed off or it will leave your sauce looking greasy.



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Roux needs to be cooked to remove the raw, starchy taste of the flour. To prepare roux, first melt the fat required for the amount of roux you wish to prepare. This usually is done in a saucepan on a stove. Then the flour is added to the fat and stirred until the fat and flour are incorporated. The flour can be added in stages to help the fat take in the flour evenly and keep the roux smooth while you are mixing. The mixture must then be cooked, generally for 1-3 minutes over a medium heat for "all purpose" or a "blonde" roux.

Proportions of Roux for Thickening Sauces

Roux, as a thickening ingredient, has strength, or the ability to hold or bind liquids. This strength varies due to a number of factors. As we know, the amount of starch that was contained in the flour and the degree to which the roux was cooked will vary the strength. There are also variations between different types of liquids to which the roux is added. Some liquids already contain starches or gelatins that give the sauce a head start or boost when thickening, like potatoes in stew, or bone marrow in stock. Others, like water, are totally void of all thickness and body. Another factor is, "How thick is the sauce supposed to be?" As you may have surmised, using starches, such as roux, is not going to be an exact science.

Incorporating Roux

There is some flexibility when it comes to incorporating roux with a liquid. The liquid can be added to the roux or the roux can be added to the liquid. The liquid can be hot or cold, but not too hot or too cold. Very cold liquids can cause the fat in the roux to solidify and not incorporate. If roux is mixed with very hot or boiling liquids, the starch will cook and lump before it has a chance to incorporate. Adding hot roux to hot liquid can cause some splattering and possibly some lumps. These are just general guidelines and there are numerous variations. Using roux, like preparing it, is a matter of experience.

Types of Roux

Roux is cooked until it reaches the color desired. There are several types of roux used in cooking. They are achieved by varying the amount of time the roux is cooked. As roux cooks, it changes from a pale yellow to a very dark, almost black color, hence the names that are given to the various types of roux.

White roux is a roux cooked for just long enough to cook out the raw taste of the flour, only a few minutes. The roux will be chalky, slightly gritty and frothy. White roux is not white, but a pale yellow color. It is named white because it is added to white sauces which you do not wish to add color, such as, milk, cream and Béchamel sauces. Blonde roux or pale roux is roux that has been cooked until it just starts to change color. It will be just slightly darker than the white roux and smell like popcorn getting ready to pop. This roux is used to thicken white stocks. The roux will give the sauces a pale, ivory color.

Brown roux is cooked until the roux takes on a light brown color and gives off a strong nutty aroma. The roux is cooked on a lower heat for a longer period of time to prevent scorching.

Browning flour in an oven before adding it to the fat will result in an even deeper brown color. Keep in mind that a heavily browned roux has only about 1/3 the thickening power of white roux. Brown roux is used to color and flavor brown sauces.



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Creole chefs are known for using black roux. This is a roux that is cooked for a long period of time over a fairly high heat. It must be stirred constantly to keep from burning. This roux is used to add a very distinctive flavor to Creole soups and sauces. Again, the darker the roux, the less thickening power it has.

Other Thickening Agents

Besides roux there are several other starches commonly used as thickening agents.

A special type of roux is called a Beurre manie. This is a mixture of equal parts of raw butter and flour that is worked together to form a smooth paste. It is added to a sauce at the end of cooking to quickly thicken it. It is added in small pieces that are stirred until smooth. This continues until the desired thickness is reached. The sauce should then be simmered for a minute or so to finish cooking the flour before removing the sauce from the heat. Raw butter adds a nice flavor and sheen to sauces.

Whitewash is the term used for slurry of cold water and flour. This method produces inferior sauces and is not recommended for use.

Cornstarch and potato starch are made into slurry with cold water. Cornstarch gives sauces a shiny, glossy and almost clear look. The slurry should be added to hot liquid, brought to a boil and then simmered until the cloudiness of the starch cooks and the sauce clears. Boiling or holding sauces hot that have been thickened with cornstarch may break down the starch and thin out the sauce. Cornstarch is commonly used for sweet sauces. It has about twice the thickening power of flour.

Arrowroot is used just like cornstarch and produces an even clearer sauce, but it is more expensive.