



G4G TECHNICAL GUIDELINES

Cooking Stock

P-G-300

This guideline card supports feeding operations during COVID-19. A new card (with updated recipes) will be developed once normal working operations resume at CCDC-SC (Natick).

Stock, a flavorful base for many recipes, is created by extracting flavor and nutrients from ingredients that are often thought of as food scraps or waste but actually have much to offer. Scratch-made stock can be used in place of concentrated soup base plus water in any recipe from soup to sauce to casserole. Although making stock from scratch is harder, the results are well worth it and the ingredients are likely to be things already on hand in your facility, especially for vegetable and chicken (or turkey) stock. A good stock should be aromatic and have a mild, savory flavor.

When making a stock, there's a lot of flexibility in the process, but there are some basic principles to follow to achieve an acceptable end product. Certain vegetables and herbs—such as onions, carrots, celery, black peppercorns, bay leaves, and parsley—are typically used in stock preparation. However, there are many other vegetables and herbs that can be used and some that should be avoided. See the list below of what to use and what to avoid. While fresh herbs (mentioned below) can greatly improve the flavor of your stock, they're not essential. And if they're not available, don't substitute with dry herbs—just omit them.

Salt typically shouldn't be added to a stock. Add salt to the recipe the stock is used in instead (when appropriate). Stock can be made ahead and refrigerated or frozen until needed. If planning to use stock right away, try to skim some of the fat off the surface during cooking. Chilling chicken and beef stock for later use also offers an opportunity to scrape solidified fat from the surface of the stock prior to using it. Still, it's important not to mistake gelatinized stock as all fat because collagen and gelatin are extracted from animal bones and connective tissues during cooking.

The most common varieties of stock called for in Armed Forces Recipe Service (AFRS) recipes are vegetable, chicken, and beef. Other types of stock include shrimp, ham, fish, and turkey. The ingredient amounts in the recipes below are for small batches. Stock scales easily to larger batches.



G4G TECHNICAL GUIDELINES

Vegetable stock

1. Choose the vegetables. Onions, carrots, and celery provide a great foundation. Additional vegetables, like garlic and scallions, provide flavor. The following are sample amounts of the most common vegetables, and others can be added as well.
 - 2 medium onions
 - 2 large carrots
 - 6 celery stalks
 - 6 garlic cloves
2. Clean whole, unpeeled vegetables thoroughly and cut into 1-inch pieces. It's fine to add clean vegetable scraps (for example, carrot and onion peels) from other prep work to the stock too.
3. Add seasonings (optional). A small bunch of fresh parsley, a few whole black peppercorns, a sprig of thyme, or a couple of bay leaves work well to enhance the flavor of stock. (Keep in mind these “measures” are relative to a home-size batch of stock. So if you're making a larger batch in a steam-jacketed kettle [SJK] or tilt skillet, increase the amounts.) Sample amounts:
 - 6 sprigs parsley (about ½ a bunch)
 - 2 bay leaves
 - 1 tsp whole black peppercorns
4. Sauté vegetables in 1 Tbsp of canola or vegetable oil until softened, about 5–7 minutes. A bit of browning helps build the flavor of the stock.
5. Cover the vegetables with water plus a bit more (exact amounts aren't key to making stock). Bring the mixture to a boil, then reduce the heat to a simmer, and cook until the amount of liquid reduces by half, about 1½ hours.
6. Strain the stock through a fine mesh sieve or strainer into one or more large bowls or pitchers. Discard the solids.

Chicken or turkey stock

- ▶ Although there are several methods for making chicken (or turkey) stock, try the recipes below for good results.
- ▶ Quantities are for small-scale, stove-top batches (about 2–3 quarts) of chicken (or turkey) stock. Scale up appropriately to the amount of stock needed.

Ingredients

Leftover bones and skin from cooked chicken or turkey (about 4 lbs or two rotisserie chickens)

1 large onion

1 large carrot (include carrot tops if available)



G4G TECHNICAL GUIDELINES

1 large celery stalk or 2–3 smaller ones (include celery tops and leaves)

1 Tbsp whole black peppercorns

2 bay leaves

1 bunch fresh parsley (if available)

Thyme, rosemary sprigs, and garlic cloves (if available)

Method

1. Clean whole, unpeeled vegetables thoroughly and cut into 1-inch pieces. It's fine to add clean vegetable scraps (for example, carrot and onion peels) from other prep work to the stock too.
2. Place the leftover chicken (or turkey) bones and skin into a large stock pot (or SJK or tilt skillet, depending on batch size and available equipment). Add onion, carrot, celery, peppercorns, bay leaves, and parsley. Add water to completely cover all chicken (or turkey) and vegetables.
3. Bring mixture to a boil and immediately reduce heat to bring the stock to a slight simmer. Partially cover the pot and simmer for 4–8 hours, occasionally skimming off any foam and fat that come to the surface. Add hot water as needed to keep the bones and vegetables submerged.
4. Remove the bones and vegetables with a slotted spoon or spider ladle.
5. Strain the stock through a fine mesh sieve or strainer into one or more large bowls or pitchers. Discard the solids.

Beef stock

- ▶ Although there are several methods for making beef stock, try the recipes below for good results.
- ▶ Quantities are for small-scale, stove-top batches (about 1 gallon) of beef stock. Scale up appropriately to the amount of stock needed.

Ingredients

Vegetable oil for drizzling

4–5 lbs meaty beef bones (with bone marrow), including knuckle bones

1 lb beef stew meat (chuck or flank steak), cut into 2-inch pieces

2 large onions

2 large carrots

1 large celery stalk or 2–3 smaller ones (include celery tops and leaves)

½ tsp whole black peppercorns

2 bay leaves

4 sprigs parsley (if available)

2 garlic cloves (if available)



G4G TECHNICAL GUIDELINES

Method

1. Preheat convection oven to 375°F (400°F for conventional oven).
2. Clean whole, unpeeled vegetables thoroughly and cut into 1-inch pieces. It's fine to add clean vegetable scraps (for example, carrot and onion peels) from other prep work to the stock too.
3. Place bones, meat, carrots, and onions in a roasting pan (sheet pans or steam-table pans, if roasting pans are unavailable).
4. Drizzle vegetable oil generously over the ingredients. Roast in oven until brown, about 30–35 minutes (45 minutes for conventional oven), flipping bones and meat halfway through cooking.
5. Transfer the roasted bones, meat, and vegetables to a large stock pot, SJK, or tilt skillet.
6. Place the roasting pan(s) on the stove over low heat. Pour ½ cup water in the roasting pan to deglaze it and use a metal spatula to scrape up the brown bits stuck to the bottom of the pan.
7. Add deglazed browned bits in water (for great flavor and color!), celery, garlic, parsley, bay leaves, and peppercorns to the stockpot. Fill the stockpot with cold water, covering the bones and vegetables by 1–2 inches. Bring mixture to a boil. Immediately reduce heat to bring the stock to a slight simmer.
8. Partially cover the pot and simmer for at least 3–4 hours, occasionally skimming off any foam and fat that come to the surface. For a richer flavor, cook for 6–8 hours.
9. Strain out and discard the solids with a slotted spoon. Pour through a sieve or fine-mesh strainer into a large bowl.
10. Cover and refrigerate until chilled. Remove solid fat from the surface.





G4G TECHNICAL GUIDELINES

Vegetables, fresh herbs, and their suitability for use in stocks

Ideal

- ▶ **Bay leaves.** 1 or 2 leaves per quart of liquid is a good amount.
- ▶ **Carrots.** Excellent for making stock or broth.
- ▶ **Celery stalks.** Excellent for making stock or broth.
- ▶ **Garlic.** Excellent for making stock or broth.
- ▶ **Leeks.** Excellent for making stock or broth.
- ▶ **Mushrooms.** Mushrooms add rich flavor to vegetable stock. Keep in mind that mushrooms are a fungus, not a vegetable.
- ▶ **Onions.** Excellent for making stock or broth.
- ▶ **Scallions.** Excellent for making stock or broth.
- ▶ **Shallots.** Excellent for making stock or broth.

Acceptable (with limitations)

- ▶ **Asparagus.** Good in small quantities (no more than 1/6 of the stock ingredients).
- ▶ **Basil, fresh.** Good in very small quantities (no more than 1/10 of the stock ingredients).
- ▶ **Beet greens.** Good in small quantities (no more than 1/10 of the stock ingredients). Tip: Add greens toward the end of cooking because they break down quickly.
- ▶ **Bell or sweet peppers.** Okay in small quantities (no more than 1/10 of the stock ingredients).
- ▶ **Carrot tops (leafy part).** Use only in very small quantities (no more than 1/16 of the stock ingredients). Too many can make the stock bitter.
- ▶ **Celery leaves.** While the outer leaves can make the stock bitter, a small amount of the pale inner leaves can be used with good results.
- ▶ **Chard.** Good in small quantities (no more than 1/6 of the stock ingredients).
- ▶ **Chives, fresh.** Good in small quantities (no more than 1/10 of the stock ingredients).
- ▶ **Cilantro, fresh.** Cilantro is too strong for broth and stock. If you really want to use it, be sure to only use a very small amount. A little goes a long way, so you might be better off adding it to the recipe that calls for stock instead.
- ▶ **Cucumber.** Good in small quantities (no more than 1/6 of the stock ingredients).
- ▶ **Dill, fresh.** Good in very small quantities (no more than 1/10 of the stock ingredients).
- ▶ **Eggplant.** Good in small quantities (no more than 1/6 of the stock ingredients).



G4G TECHNICAL GUIDELINES

- ▶ **Green beans.** Good in small quantities (no more than 1/5 of the stock ingredients).
- ▶ **Greens.** Avoid bitter greens and members of the brassica family (kale, cabbage, and bok choy). Use small quantities of other greens instead.
- ▶ **Jerusalem artichokes.** Good in small quantities (no more than 1/5 of the stock ingredients).
- ▶ **Lettuce.** Good in small quantities (no more than 1/10 of the stock ingredients). Keep in mind most lettuce varieties don't add much flavor to stock or broth.
- ▶ **Marjoram, fresh.** Good in very small quantities (no more than 1/10 of the stock ingredients).
- ▶ **Okra.** Okra can add body to broth. Use in small quantities to avoid overwhelming flavor.
- ▶ **Onion skins.** Onion skins add a lovely color to broth or stock. Just don't add too many of them unless you want your stock to have a dark color.
- ▶ **Oregano, fresh.** Good in small quantities (no more than 1/10 of the stock ingredients).
- ▶ **Parsley, fresh.** Good in small quantities (no more than 1/6 of the stock ingredients).
- ▶ **Parsnips.** Good in small quantities (no more than 1/6 of the stock ingredients).
- ▶ **Peas.** Good in small quantities (no more than 1/6 of the stock ingredients).
- ▶ **Pea pods.** Good in small quantities (no more than 1/6 of the stock ingredients).
- ▶ **Potato peels.** Can be used in small quantities. Potato skins add an earthy, but slightly bitter taste. Too many can make the stock cloudy. Be sure the peels are very clean, or you'll end up with stock that tastes like dirt.
- ▶ **Rosemary, fresh.** Some like the taste rosemary adds to stock or broth, but others find it lends a bitter flavor, so use with caution.
- ▶ **Spinach.** Good in small quantities (no more than 1/6 of the stock ingredients). For best results, add toward the end of cooking.
- ▶ **Squash (winter) peel.** Squash peels add good flavor to stock or broth. Use no more than 1/8 of the total stock ingredients. Don't add flesh (too starchy), seeds, or membranes.
- ▶ **Thyme, fresh.** Very good in small quantities (no more than 1/10 of the stock ingredients).
- ▶ **Tomatoes.** Excellent for making stock and broth. Limit the amount of tomato seeds due to their bitter flavor.
- ▶ **Turnip greens.** Okay in small quantities (no more than 1/10 of the stock ingredients). Tip: Add greens toward the end of cooking since they break down quickly.
- ▶ **Zucchini.** Good in small quantities (no more than 1/6 of the stock ingredients).



G4G TECHNICAL GUIDELINES

Not suitable

- ▶ **Beets.** Beets will turn the stock a very dark color, which might not work well for some purposes. Don't use beet skins.
- ▶ **Bok choy.** Bok choy is too strong for stock and broth and can add a bitter taste.
- ▶ **Broccoli.** Too strong for stock and broth, broccoli can add a bitter taste.
- ▶ **Cabbage.** Cabbage is too strong for stock and broth and can add a bitter taste.
- ▶ **Collard greens.** Collards are too strong for stock and broth and can add a bitter taste.
- ▶ **Corn.** Corn doesn't add a lot of flavor and can make the stock or broth cloudy. Tip: Use corn to make corn stock for corn chowder instead.
- ▶ **Hot peppers.** Not recommended.
- ▶ **Kohlrabi.** Too strong for stock and broth, kohlrabi can add a bitter taste.
- ▶ **Napa cabbage.** Cabbage is too strong for stock and broth and can add a bitter taste.
- ▶ **Pumpkin.** Pumpkin is a little too starchy for good stock or broth.
- ▶ **Radish.** Not recommended.
- ▶ **Rutabagas.** Too strong for stock and broth, rutabagas can also add a bitter taste.
- ▶ **Sweet potatoes & yams.** Sweet potatoes don't add much flavor to stock or broth, and some varieties are too starchy.
- ▶ **Turnips.** Turnips are too strong for stock or broth.
- ▶ **Winter squash (flesh).** Squash is a little too starchy for stock or broth.