



UCCE Master Food Preservers of El Dorado County

311 Fair Lane, Placerville CA 95667

Hotline (530) 621-5506 • Email: edmfp@ucanr.edu • Visit us on Facebook!

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Freeze Drying For Home Use



Outline

1. What is freeze drying?
2. Why freeze dry?
3. What types of food can be freeze dried?
4. What is the process for freeze-drying food?
5. What are the advantages and disadvantages of freeze-drying food vs. dehydrating (with dehydration machine)?
6. How do you safely prepare foods with a freeze dryer?
7. What are storage considerations for freeze-dried food?
8. Should you purchase a freeze dryer?
9. What are basic food safety and sanitation steps?
10. Resources
11. Recipes
12. Appendix I – Components of A Freeze-Dryer

1. What is Freeze Drying?

The USDA says “Freeze drying is a process in which water is removed from a product after it is frozen and placed under a vacuum, allowing the ice to change directly from solid to vapor without passing through a liquid phase.”¹ The process of freeze drying has minimal preparation. Processing time may be longer but it does not require constant attention. Food can be immediately packaged from the freeze dryer into storage containers.²

A freeze dryer is not an extravagant dehydrator. Both a freeze dryer and a dehydrator remove moisture from food so that micro-organisms cannot grow and enzyme action is slowed. However, a dehydrator uses low heat and a fan to remove 80-90% of moisture. In contrast, a freeze dryer does not use heat in the same way that a dehydrator does to preserve the food, but instead it uses cold temperature to drop the product to less than negative 40 degrees Fahrenheit. It then reduces the pressure and adds low heat to allow the frozen water in the product to change directly to a vapor (sublimate). This removes around 97% of moisture (according to Harvest Right).³

Harvest Right, a company in Salt Lake City, Utah, introduced a freeze-drying unit for home use in 2018, starting a new opportunity for home preservation.⁴ Blue Alpine (<https://bluealpinefreedryers.com/>) and Cube (https://p4lfood.com/collections/the-cube-bundle?gad_source=1&gclid=EAlaIQobChMI9y68sjWhgMV_xatBh2HUQI5EAAYASAAEglykfD_BwE) also manufacture home freeze dryers.

2. Why Freeze Dry?

There are many reasons to freeze dry food:

- Preserving excess food
- Preparing for food shortages
- Quick healthy snacks
- Whole meals can be freeze dried
- Herbs and vegetables can be preserved and used later in recipes for meals
- Homemade pet food.⁵

3. What types of food can be freeze dried?

Almost all types of foods can be freeze-dried, but generally avoid oily foods like butter, peanut butter and chocolate. Also, refrain from using honey, syrups and jams.⁶

The foods that work best with freeze-drying are:

- Fruits
- Vegetables
- Dairy products including cheese, milk, yogurt, ice cream
- Proteins including poultry, seafood, red meat and eggs
- Mixed foods including breads, muffins, and cake.⁷

¹ Cathy Merrill and others, “Buying a Home Freeze- Dryer,” see Resources #14.

² Emma Horsten, “Freeze-Drying,” see Resources #7.

³ Marlene Geiger, “Preserving by Home Freeze-Drying, see Resources #4.

⁴ Marlene Geiger, “Preserving by Home Freeze-Drying, see Resources #4.

⁵ Emma Horsten, “Freeze-Drying,” see Resources #7.

⁶ Emma Horsten, “Freeze-Drying,” see Resources #7

⁷ Lisa Barlage, “Freeze-Drying: Consider This,” #1 in Resources.

4. What is the process for freeze-drying food?

As noted on page 1, and according to the FDA, “Lyophilization or freeze-drying is a process in which water is removed from a product after it is frozen and placed under a vacuum, allowing the ice to change directly from a solid vapor without passing through a liquid phase. The freeze-drying process consists of three separate, unique and interdependent processes:

- Freezing
- primary drying (sublimation)
- secondary drying (desorption).

Through the process of sublimation, many of the food products retain their original texture, flavor and nutrients once reconstituted.⁸

Specifically, freeze drying is a mechanical method that applies extreme cold (-30 degrees Fahrenheit and -50 degrees Fahrenheit). The machine then introduces slight heat to produce water vapors (sublimation process). A powerful vacuum pump system then removes the water vapors. This process can only be completed with a manufactured home or commercial freeze-drying unit.⁹

Freeze drying is a *food preservation process* rather than a *food safety process*. As such, it will not make unsafe foods safe. It does not destroy enzymes or microorganisms. The microorganisms will be inactive, but they are not killed. Therefore, if food is contaminated, those same contaminants will be in the freeze-dried food when it is eaten. Special consideration should be given when eating freeze dried animal products that have not been cooked such as eggs, meats, and poultry. These foods should be labeled “raw” and should be properly heated before they are consumed.¹⁰

5. What are the advantages and disadvantages of freeze-drying food vs. dehydrating (with dehydration machine)?

Dehydration with use of dehydration machines¹¹

Advantages

- Dehydration quickly dries fruit and significantly prolongs shelf life by removing moisture, inhibiting the growth of microorganisms and preserving nutritional content.
- Dehydrated foods are compact, lightweight and convenient for storage and transportation.
- Dehydration also preserves intense flavor, making it a pleasing addition to various dishes and snacks.
- The cost of dehydration machines for home use are relatively modest.
- Dehydration machines do not require any significant storage space.
- The cost to run the machine is relatively modest.
- The machine is relatively quiet.

Disadvantages

- Dehydration can result in texture changes and a loss of freshness.
- Dehydration requires time and planning for large quantities of food with high moisture content.

⁸ Lisa Barlage, “Freeze-Drying: Consider This,” #1 in Resources

⁹ Sofia Carter and Laura Halladay, “Freeze Drying: Consider This,” see Resources #3.

¹⁰ Christine Kendle and Tiffany Haney, “Freeze Drying: Consider This,” see Resources #8.

¹¹ Ali Sarkhosh and others, “Dehydrated and Freeze-Dried Peach Fruit,” see Resources #14.

- The dehydration process causes the loss of some nutritive value, although there is a significant portion retained.

Freeze Drying¹²

Advantages:

- Ease of preparation – Food is prepared for freeze-drying generally the same way food is prepared for regular freezing.
- Preservation - Freeze-drying can preserve foods other preservation methods cannot, such as most dairy or eggs.
- Pressure canning comparison - Freeze-drying can replace pressure canning of low acid foods (but does not kill microorganisms).
- Storage – Generally freeze-dried foods are safe for longer periods than other food preservation methods.
- Nutrition – The nutrition labels of commercially freeze-dried broccoli, pineapple, and cooked chicken chunks are comparable to nutrient data of raw or commercially frozen products. Home freeze dried data lacks long term studies.
- Taste – freeze-dried foods rehydrate more fully than dehydrated products, so the taste and texture are closer to fresh than with a dehydrated product.
- Cost – Home freeze-dried foods are substantially cheaper than commercially freeze-dried foods. The commercial companies often have a mark-up of up to 85% more than a home-produced product (Jessen, 2018).

Disadvantages

- Cost - The machine can cost from \$ 2,000 (small home product) to \$10,000 (commercial product). In addition, the ongoing cost of supplies must be considered:
 - The price for 60 mylar 1-gallon bags with 60 300 cc oxidizer packets is \$24 (2018). The oxidizer packets are a one-time use, but mylar bags could be cut and reused.
 - The cost of a vacuum oil pump starts at \$20 per gallon, although that oil can be filtered and reused. An oil-less pump is an add-on, but with an upfront additional cost of \$1600 (Harvest Right, November 2018).
 - Reports on the cost of electricity vary. One consumer on the east coast said her electricity bill went up \$20-30 a month during heavy usage time (Merrill, 2018, personal correspondence). Consumers in the Intermountain West figured between \$2-\$5 worth of electricity per batch. (Jessen, 2018)
- Options – Consumer choices for this appliance are currently limited (Harvest Right, Cube, and Blue Alpine).
- Size of machine – this is not a small appliance, probably the size of a small home freezer. Generally, a small unit weighs about 139 lbs.
- Installation of unit – This appliance cannot sit on the floor because it must be elevated for the following reasons:
 - Ice melt tubing to drain into a container
 - Access to vacuum pump and on/off switch.
- Temperature – Freeze dryers like most machines work best in ambient temperatures of 45 degrees to 80 degrees Fahrenheit.
- Noise – When the vacuum pump turns on, the noise level is 62 to 67 decibels – a vacuum cleaner is 70 decibels.
- Time – The typical batch time is between 20 to 40 hours. Very dense foods and foods high in sugar may take between 48 to 52 hours, although there is little attention required during processing time.

¹² Cathy Merrill and others, "Buying a Home Freeze-Dryer," see Resources #13.

- Batch quantities – The mid-size machine handles between 7-10 pounds of food. A bushel of peaches is 48 pounds. Figuring a 24-hour process time plus a 3 hour defrost time to make the machine ready for another batch, it would take over a week to freeze dry one bushel of peaches (assuming the peaches can wait to be processed for a week).

See the Table 1 reproduced below from a research study of from the University of Florida that contrasts the nutritional content of freeze drying with air drying and Radiant Energy Vacuuming (REV) drying.¹³ As can be seen, freeze drying is generally superior to other methods for retention of vitamin and mineral content.

Table 1¹⁴
Comparison of Nutritional Value in Various Drying Methods

Row Labels	Sum of Moisture Content (%) (w/w)	Sum of Ascorbic Acid (mg/g)	Sum of Carotene (µg/g Dry Weight)	Sum of Water Activity
Fresh Broccoli	88.80	3.79	0.00	0.00
Air-dried Broccoli	5.20	1.27	0.00	0.27
Freeze-dried Broccoli	3.70	3.77	0.00	0.12
REV-dried Broccoli	5.80	3.61	0.00	0.31
Fresh Carrot	90.03	0.00	3.00	0.00
Air-dried Carrot	15.03	0.00	0.52	0.49
Freeze-dried Carrot	8.43	0.00	2.98	0.05
REV-dried Carrot	9.00	0.00	1.28	0.28
Fresh Orange	81.80	3.97		0.00
Air-dried Orange	9.30	2.65	0.00	0.13
Freeze-dried Orange	6.66	3.82	0.00	0.36
REV-dried Orange	9.13	3.29	0.00	0.28
Grand Total	332.88	26.17	7.78	2.29

Note: This study also reviewed REV drying. REV™ drying from Enwave is a rapid, low temperature drying method that according to the company website maintains the product's color, flavor, and nutrients during the drying process. The company also states that its patented vacuum-microwave technology enables uniform drying with flexible moisture content unattainable with Freeze Drying or Air Drying.¹⁵ This technology is not yet available for home use. The yellow highlighted areas above show the most effective method for each category.

6. How do you safely prepare foods with a freeze dryer?

Follow the steps in the “Food Safety” section below for food preparation. All produce should be thoroughly washed before it is eaten or preserved by rinsing or scrubbing with a clean vegetable brush under cold running water. Produce should not be soaked in water.

Certain foods need to be pretreated to prevent browning (apples, pears, peaches, and apricots dry better when pretreated) prior to freeze drying. In addition, blanching vegetables in a solution that contains 1/4 teaspoon of citric acid per quart of water facilitates the destruction of potentially harmful microorganisms and slows the enzyme reactions that will continue during

¹³ Xanyar Mohammadi and others, “Impact of Three Different Dehydration Methods...,” see Resources #17

¹⁴ Xanyar Mohammadi and others, “Impact of Three Different Dehydration Methods...,” see Resources #17

¹⁵ See Enwave website at <https://enwave.opacity.design/how-it-works>

drying and storage¹⁶. See the article titled “Let’s Preserve: Drying Fruits and Vegetables” in Resources, #11.

Also, cut foods into uniform portions that the so that it freeze-dries at the same rate. Consider the rate at which food freeze dries, and food with a similar drying time should be processed together. Drying times can vary from about 24 – 48 hours. Also make sure that the food is evenly spaced and is not above the edges of the pan since some products expand when freeze-dried¹⁷.

Read the freeze dryer’s instructions thoroughly before you begin. There are steps in the freeze-drying process that, if not done in the proper order, can damage the machine and void the manufacturer’s warranty.¹⁸

7. What are storage considerations for freeze-dried food?

Methods

Storage is a major consideration for freeze dried products. Iowa State University states that “The storage container must eliminate oxygen, light, and moisture.” The following containers may be used in order of long-term to short term storage:

- Mylar bags
- vacuum-sealed canning jars
- #10 cans
- vacuum sealed bags
- PETE re-sealable containers.¹⁹

Generally, you should follow the manufacturer’s instructions for the bags for these storage options. For an example, see the following from *PackFreshUSA*:

- How to Use Oxygen Absorbers in Mason Jars²⁰
- How to Seal Mylar Bags – Quart or Gallon Size²¹

Length of Safe Storage

To date, very little university research has been done on in-home freeze drying; specifically, research on how long the food retains quality and nutritive characteristics as well as bacterial studies. Harvest Right claims that if properly processed and stored, food can be safe up to 25 years.²² As noted above, this has not been corroborated by university studies for home freeze dryers. Other manufacturers are *Cube* (Pre4Life), and *StayFresh* Dryers. These cite similar shelf-life storage times.

¹⁶ LaBorde, Luke and Andy Hirneisen, “Let’s Preserve: Drying Fruits and Vegetables,” see Resources #11.

¹⁷ McGeehan, Nicole, and Andy Hirneisen, “Let’s Preserve: Freeze-Drying,” see Resources #13.

¹⁸ Kate McCarty, “Tips for Freeze-Drying at Home,” see Resources #12.

¹⁹ Marlene Geiger, “Preserving by Home Freeze Drying,” see #

²⁰ *PackFresh USA* - http://cdn6.bigcommerce.com/s-uyn0oyt/product_images/uploaded_images/How%20to%20Use%20Oxygen%20Absorbers%20in%20Mason%20Jars.pdf

²¹ *PackFresh USA* - [http://cdn6.bigcommerce.com/s-uyn0oyt/product_images/uploaded_images/How%20to%20Seal%20Mylar%20Bags%20\(Quart%20or%20Gallon%20Size\).pdf](http://cdn6.bigcommerce.com/s-uyn0oyt/product_images/uploaded_images/How%20to%20Seal%20Mylar%20Bags%20(Quart%20or%20Gallon%20Size).pdf)

²² See *Harvest Right* -

https://harvestright.com/?gad_source=1&gclid=EAlaIqobChMIpbq0k9HAhgMV5s_CBB1VZABDEAAYASAAEgK18_D_BwE

Utah State Extension staff has been experimenting with the *HarvestRight* home dryers, and states that the process is safe assuming that the two subprocesses (freezing and vacuum drying) are done correctly, and proper safe food handling techniques are employed in the preparation of food prior to freeze-drying. The Utah Study makes no predictions as to shelf life since the technology is relatively new.²³ Colorado State University states that if properly processed and stored, conventionally dehydrated dried fruits and vegetables keep well for 6-12 months. See “Drying Fruits,”²⁴ and “Drying Vegetables,”²⁵ by P Kendall, Colorado State University. Given the lower moisture component of freeze-dried foods, it seems they should have a shelf life of at least the shelf life of similar dehydrated foods.

8. Should you purchase a Freeze-Dryer?

Before purchasing a machine, determine the following:

- What is the goal of your product?
 - Backpacking
 - Dinners
 - The Apocalypse
- What tastes best?
 - Decide which type of food you like – you may prefer traditional canning or dehydrating
- Does the freeze-drying machine fit into your budget, and will it fit into your home?²⁶

9. What Are Basic Food Sanitation and Safety Steps

For information on food sanitation and safety, see p. 1 of the Colorado State University Extension document available on the web at

<https://extension.colostate.edu/docs/pubs/foodnut/kitchen-sanitize.pdf>.²⁷

For information on avoiding food borne illness, see the document available on the web at

<https://extension.colostate.edu/docs/pubs/foodnut/09300.pdf>.²⁸

For information on sanitizing the kitchen, see the Master Food Preserver document available on the web at https://ucanr.edu/sites/mfp_of_cs/files/394035.pdf

²³ Cathy Merrill and others, “What to Know Before You Go,” see Resources #14

²⁴ P. Kendall, “Drying Fruits,” see Resources #9

²⁵ P. Kendall, “Drying Vegetables,” see Resources #9

²⁶ Cathy Merrill and others, “Buying a Home Freeze-Dryer,” see Resources #13.

²⁷ Janet Buffer and others, “Cleaning and Sanitizing the Kitchen,” see Resources #2.

²⁸ P. Kendall, “Bacterial Food-Borne Illness, see Resources #10

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[Recipes](#)

Skillet Chicken Fajita
Backpacker Chili
Vegetable Chips
Taco Soup in a Jar
Chicken Noodle Skillet Meal in a Jar
Ground Beef and Zucchini Quiche Casserole
Beef and Bean Stew in a Jar
Creamy Chicken Veggie Casserole in a Jar
Beef Taco Rice Meal in a Jar

Note: Some of these recipes contain both freeze dried and dehydrated food. In that case, the lower shelf life for the dehydrated food should be used for safety purposes.

The Colorado State University Extension says dehydrated fruits and vegetables can be stored 6-12 months if properly treated and sealed. See Resources #9. Meats have shorter shelf lives. The manual of dehydration machine used should indicate the shelf life for the product being preserved.

Skillet Chicken Fajita Recipe

September 1, 2023

Spice up your dinner with Skillet Chicken Fajitas! Bursting with bold flavors and tender chicken, this quick and easy recipe will transport your taste buds to the heart of Mexico. Load up your tortillas with sizzling fajitas and all your favorite toppings for a fiesta of flavors!

Ingredients:

- 1/4 cup lime juice
- 1 garlic clove, minced
- 1 teaspoon chili powder
- 1/2 teaspoon salt
- 1/2 teaspoon ground cumin
- 2 tablespoons olive oil, divided
- 1-1/2 pounds boneless skinless chicken breasts, cut into strips
- 1 medium onion, cut into thin wedges
- 1/2 medium sweet red pepper, cut into strips
- 1/2 medium yellow pepper, cut into strips
- 1/2 medium green pepper, cut into strips
- 1/2 cup salsa
- 12 flour tortillas (8 inches), warmed
- 1-1/2 cups shredded cheddar cheese or Monterey Jack cheese

INSTRUCTIONS

1. Mix first 5 ingredients and 1 tablespoon oil.
2. Add chicken; toss to coat. Let stand 15 minutes.
3. In a large nonstick skillet, heat remaining oil over medium-high heat; sauté onion and peppers until crisp-tender, 3-4 minutes.
- 4.
5. Remove from pan.
6. In same skillet, sauté chicken mixture until no longer pink, 3-4 minutes.
7. Stir in salsa and pepper mixture; heat through.
8. Serve in tortillas.
9. Sprinkle with cheese.

FREEZE-DRYING INSTRUCTIONS

1. Spread fajita mixture evenly on trays lined with silicone mats. Make note of the weight of the trays with food.
2. Process according to freeze-dryer instructions.
3. When finished freeze-drying, note the weight of the trays. The difference in weight of the trays before and after freeze-drying is the recommended amount of water needed to reconstitute the dish.

TO RECONSTITUTE

Add recommended amount of hot water to fajita mixture. Stir and let sit a few minutes until fully reconstituted. More, or less, than the recommended amount of water can be added to get the desired consistency.

<https://p4lfood.com/blogs/recipes?page=5>

Backpacker Chili

July 20, 2023

Give your camping trip a kick with this lightweight and easy to transport meal!

Ingredients

- 1 tablespoon olive oil
- 1 medium yellow onion -diced
- 1 pound 90% lean ground beef
- 2 1/2 tablespoons chili powder
- 2 tablespoons ground cumin
- 2 tablespoons granulated sugar
- 2 tablespoons tomato paste
- 1 tablespoon garlic powder
- 1 1/2 teaspoons salt
- 1/2 teaspoon ground black pepper
- 1/4 teaspoon ground cayenne pepper* -optional
- 1 1/2 cups beef broth
- 1 (15 oz.) can petite diced tomatoes
- 1 (16 oz.) can red kidney beans, drained and rinsed
- 1 (8 oz.) can tomato sauce

INSTRUCTIONS

1. Add the olive oil to a large soup pot and place it over medium-high heat for two minutes.
2. Add the onion. Cook for 5 minutes, stirring occasionally.
3. Add the ground beef to the pot. Break it apart with a wooden spoon. Cook for 6-7 minutes, until the beef is browned, stirring occasionally.
4. Add the chili powder, cumin, sugar, tomato paste, garlic powder, salt, pepper, and optional cayenne. Stir until well combined.
5. Add the broth, diced tomatoes (with their juice), drained beans, and tomato sauce. Stir well.
6. Bring the liquid to a low boil. Then, reduce the heat (low to medium-low) to gently simmer the chili, uncovered, for 20-25 minutes, stirring occasionally.
7. Remove the pot from the heat. Let the chili rest for 5-10 minutes before serving.

FREEZE-DRYING INSTRUCTIONS

1. Spread chili evenly on trays lined with silicone mats. Make note of the weight of the trays with food.
2. Process according to freeze-dryer instructions.
3. When finished freeze-drying, note the weight of the trays. The difference in weight of the trays before and after freeze-drying is the recommended amount of water needed to reconstitute the dish.

TO RECONSTITUTE

Add recommended amount of hot water to chili. Stir and let sit a few minutes until the chili is fully reconstituted. More, or less, than the recommended amount of water can be added to get the desired consistency.

<https://p4lfood.com/blogs/recipes/backpacker-chili>

Vegetable Chips

February 23, 2023

Snack healthier with our Vegetable Chips recipe, a crispy and flavorful alternative to traditional chips and easy to make at home. Great for a plentiful harvest or working more vegetables into your family's diet.

Ingredients

- Vegetable of Choice (Zucchini, Sweet Potato, Beets, Kale, Squash, etc.), slice into thin rounds
- Olive Oil
- Seasonings of Choice (Seasoned Salt, All-Purpose Seasoning, Seasoning Blend, etc.)

Instructions

- Lay vegetables evenly on trays lined with silicone mats.
- Freeze-dry according to instructions.
- After vegetables are done freeze-drying, spritz lightly with olive oil. Sprinkle seasoning over the top and toss lightly to coat.

Note: If spritzing with olive oil, eat immediately. If storing, eliminate the oil. It can be added just before eating, if desired, for taste.

<https://p4lfood.com/blogs/recipes/vegetable-chips>

Taco Soup in a Jar

Delicious south of the border flavors you can enjoy any time without all the work - just add water and simmer! Makes a great gift or addition to your food storage!!

Prep Time 10 minutes mins

Cook Time 30 minutes mins

Total Time 40 minutes mins

Course: Meals in a Jar

Cuisine: Mexican

Keyword: easy dinner, food gift, food storage, make ahead meal, Meal in a Jar, neighbor gift, taco soup

Servings: 6 people

Calories: 213kcal

Author: Candi

Equipment

- Black Beans (or any dehydrated quick cook black beans)
- Freeze Dried Corn (or any freeze-dried corn).
- Vacuum Sealer Machine
- Wide-Mouth Jar Sealer
- Wide mouth quart mason (canning) jars with new lids and rings
- 100CC (100-Pack) Food Grade Oxygen Absorber Packets

Ingredients

- 2 cups quick-cook black beans
- 1 cup freeze-dried ground beef
- 2 tablespoons dehydrated minced onion
- 2 tablespoons taco seasoning
- 1 tablespoon beef bouillon
- 1 teaspoon salt
- 1/3 cup tomato powder
- 1/3 cup dehydrated diced bell peppers
- 3/4 cup freeze-dried corn

Instructions

1. Place items in layers into mason jar in the following order: beans, beef, onion, seasonings, tomato powder, bell peppers, then corn. Shake to settle contents.
2. Lay oxygen absorber on top of ingredients (optional). Wipe off rim of mason jar to allow for a good vacuum seal with the lid.
3. Place new canning lid on top of jar. Using wide-mouth attachment for a FoodSaver, vacuum seal the lid onto jar following instructions from your FoodSaver manual.
4. Once seal is done (the jar should pop) remove vacuum attachment and put ring on. Tighten by hand, but don't over tighten.
5. Label and date. Store in cool, dry location.

To cook:

1. Empty contents of jar (minus oxygen packet if present) into large stock pot or Dutch oven. Add 8 cups of water and bring to a boil over medium-high heat. Reduce heat and simmer for 30 minutes until vegetables are tender.

Nutrition

Serving: 6people | Calories: 213kcal | Carbohydrates: 21g | Protein: 16g | Fat: 7g | Saturated Fat: 3g | Polyunsaturated Fat: 3g | Cholesterol: 34mg | Sodium: 854mg | Fiber: 6g | Sugar: 2g
<https://www.makeaheadmealmom.com/meal-jar-taco-soup/>



Chicken Noodle Skillet Meal in a Jar

Chicken, vegetables and noodles all together in a rich, creamy sauce! You won't believe this came from freeze-dried and powdered ingredients!

Prep Time 10 minutes mins

Cook Time 15 minutes mins

Resting Time 5 minutes mins

Total Time 30 minutes mins

Course: Meals in a Jar

Cuisine: American

Keyword: Meal in a Jar

Servings: 4 servings

Calories: 397kcal

Author: Candi

Equipment

- Ball Wide Mouth Mason Jar Lids
- FoodSaver FM2000 Vacuum Sealer Machine
- FoodSaver Wide-Mouth Jar Sealer
- 100CC (100-Pack) Food Grade Oxygen Absorber Packets

Ingredients

- 2 cups egg noodles
- 1 tablespoon dehydrated minced onions
- 1/3 cup instant non-fat dry milk
- 1 1/2 teaspoon Italian seasoning
- 1/2 teaspoon salt
- 1/4 teaspoon pepper
- 1/4 cup butter powder
- 1/2 cup freeze-dried vegetable mix
- 1/3 cup cheese powder
- 1 cup freeze-dried diced chicken*

Instructions

1. Layer ingredients into clean, wide-mouth mason jar in the order listed above. Shake to settle contents.
2. Place new canning lid on top of jar. Using wide-mouth attachment for a FoodSaver, vacuum seal lid onto jar following instructions from your FoodSaver manual. (You can also insert an oxygen absorber before putting on lid if you'd like.)
3. Remove vacuum attachment and put ring on. Tighten by hand, but don't over tighten.
4. Label and date. Store in cool, dry location.

To cook:

1. Empty contents of jar (minus oxygen packet if present) into large skillet. Add 3 1/2 cups water and bring to a boil over medium-high heat. Reduce heat and simmer for 12-15 minutes, stirring frequently. Remove from heat and let sit 3-5 minutes to allow sauce to thicken.

Notes

You can substitute chicken textured vegetable protein (TVP) for the freeze-dried diced chicken. If you are having a hard time finding freeze-dried vegetable mix (do not use dehydrated), you can substitute freeze-dried corn or peas or a combination of both!

Nutrition

Serving: 6people | Calories: 397kcal | Carbohydrates: 31g | Protein: 21g | Fat: 21g | Saturated Fat: 11g | Polyunsaturated Fat: 8g | Trans Fat: 1g | Cholesterol: 99mg | Sodium: 550mg | Fiber: 2g | Sugar: 10g

https://www.makeaheadmealmom.com/wprm_print/3780



My Mom's Ground Beef and Zucchini Quiche Casserole

adapted from [cheftessbakeresse: Geneve's Zucchini Casserole](#)

Ingredients:

- 2T Dehydrated Green Onion
- 1 cup Freeze Dried Ground Beef (See safety note on FD real meats!)
- 1/2 cup Freeze Dried Bell Peppers
- 1/2 cup Freeze Dried Zucchini
- 1 T Powdered Butter
- 1/4 cup Egg Crystals or Dehydrated eggs
- 1/2 cup Powdered Sour Cream
- 2T Ultra Gel
- 1/2 tsp Italian Seasoning
- 1 cup Freeze Dried Cheddar Cheese

Directions:

Note: *Real freeze-dried meat must be in a glass jar or mylar bag with an oxygen absorber. Line up your jars. Get all your measuring tools and stuff together. Make sure you have all your ingredients.

1. Put the green onion, ground beef, zucchini, bell pepper in the jar. Add the powdered ingredients and shake them down into the veggie mixture. This is how I get a lot of product into a small space. I shake things a lot in my jars.
2. Add the cheese and top with a fresh 300 cc oxygen absorber. You can also use the jar attachment on a food saver, but you'll need to either cut a coffee filter to fit the top of the jar or use a cupcake/muffin liner at the top of the jar just inside the rim to keep the dry particles from clogging the hose. I prefer the speed of the oxygen absorbers. Frankly, that's how I can do so many in a short amount of time. If you want to use the slower method with the lid attachment, you can.
3. In about 25-30 minutes, the jar lid will "pop", indicating you have a vacuum seal.

To prepare: Preheat oven to 325 degrees. Pour the jar ingredients in a 2-quart bowl and add 2 1/2 cups cool water. Allow to hydrate 10 minutes.

1. Lightly grease a 9 inch by 9-inch casserole (or solar oven 9-inch round pan works too).
2. Cover with foil.
3. Bake until set, 325 degrees 50 minutes. Do not over bake. May be stored in the refrigerator after baking and heated for service.

<https://honeyville.com/blog/meals-in-jar-guest-post-chef-tess/>



Beef & Bean Stew in a Jar

A hearty beef, bean, and vegetable stew with no fuss and no muss! You will not believe this is from food storage!

Prep Time 10 minutes mins

Cook Time 20 minutes mins

Total Time 30 minutes mins

Course: Meals in a Jar

Cuisine: American

Keyword: food gifts, food storage, make ahead meals, Meal in a Jar, meals in a jar

Servings: 6 people

Calories: 190kcal

Author: Candi

Equipment

- Nutristore Freeze Dried Beef Dices
- Mother Earth Products Dehydrated Fast Cooking Black Beans
- Mother Earth Products Dried Potato Dices
- Augason Farms Tomato Powder
- Beef-flavored TVP (as substitute for FD beef or to make vegetarian)
- FoodSaver FM2000 Vacuum Sealer Machine
- FoodSaver Wide-Mouth Jar Sealer
- 100CC (100-Pack) Food Grade Oxygen Absorber Packets

Ingredients

- 1 cup quick cook black beans
- 1 cup freeze-dried diced beef
- 2 tablespoon beef bouillon powdered or granules
- 2 tablespoons dehydrated minced onions
- 1 teaspoon granulated garlic
- 1 teaspoon thyme
- 2 tablespoons tomato powder
- 1 cup dehydrated diced potatoes
- 1 cup freeze-dried mixed vegetables
- 1 teaspoon salt

Instructions

1. Layer ingredients into a clean quart-size mason jar in the order listed above. Shake to settle contents.
2. Place new canning lid on top of jar. Using wide-mouth attachment for a FoodSaver, vacuum seal lid onto jar following instructions from your FoodSaver manual. (You can also insert an oxygen absorber before putting on lid if you'd like.)
3. Remove vacuum attachment and put ring on. Tighten by hand, but don't over tighten.
4. Label and date. Store in cool, dry location.

To cook:

1. Gently pry lid off of jar and discard. Remove oxygen packet (if used). Empty contents of jar into large stock pot or Dutch oven. Add 6 cups water and bring to boil over medium-high heat. Reduce heat and simmer for 20 minutes.

Notes

You can use quick cook red beans in place of the black beans if you prefer.

If freeze-dried meat is difficult to find, or too expensive, you can substitute a 1:1 ratio of beef-flavored TVP.

Nutrition

Serving: 6people | Calories: 190kcal | Carbohydrates: 16g | Protein: 14g | Fat: 8g | Saturated Fat: 3g | Polyunsaturated Fat: 4g | Cholesterol: 33mg | Sodium: 907mg | Fiber: 4g | Sugar: 2g

https://www.makeaheadmealmom.com/wprm_print/3771



Creamy Chicken Veggie Casserole in a Jar

Peas, carrots, chicken, and bow tie pasta all nestled in a warm, creamy cheese sauce! This is easy comfort food that you can have on the table in under 40 minutes. Just add water and bake!

Prep Time 5 minutes mins

Cook Time 35 minutes mins

Total Time 40 minutes mins

Course: Meals in a Jar

Cuisine: American

Keyword: Creamy Chicken Veggie Casserole, emergency preparedness, food storage, freeze-dried, just add water, Meal in a Jar

Servings: 4 people

Calories: 269kcal

Author: Candi

Equipment

- Ball Wide Mouth Mason Jar Lids
- Vacuum Sealer Machine
- Wide-Mouth Jar Sealer
- 100CC (100-Pack) Food Grade Oxygen Absorber Packets
- Freeze-Dried Peas (use half peas and half corn if you cannot find a freeze-dried mixed veggies)
- Farms Freeze-Dried Corn

Ingredients

- 2 cups bow tie pasta
- 1 cup freeze-dried vegetable mix
- 1 cup freeze-dried chicken chunks or chicken TVP
- 2 tablespoons dehydrated minced onions
- 1 teaspoon Italian seasoning
- 1/3 cup cheese powder
- 1/3 cup instant dry milk
- 1/3 cup sour cream powder
- 1/4 cup butter powder
- 1/2 teaspoon salt
- 1/4 teaspoon pepper

Instructions

1. Put all ingredients into a quart-size wide-mouth mason jar in the order listed above, and shake to settle contents.
2. Place new canning lid on top of jar. Using wide-mouth attachment for a FoodSaver, vacuum seal lid onto jar following instructions from your FoodSaver manual. (You can also insert an oxygen absorber before putting on lid if you'd like.)
3. Remove vacuum attachment and put ring on. Tighten by hand, but don't over tighten.
4. Label and date. Store in cool, dry location.

To cook:

1. Gently pry lid off of jar and discard. Remove oxygen packet (if used). Empty contents of jar into casserole dish. Add 4 cups hot water and let sit for 5-10 minutes. Cover and bake at 350 degrees Fahrenheit for 35 minutes.

Notes

You can use any combination of vegetables that you'd like, just keep your total amount to 1 cup max to make sure it will all fit in the jar.

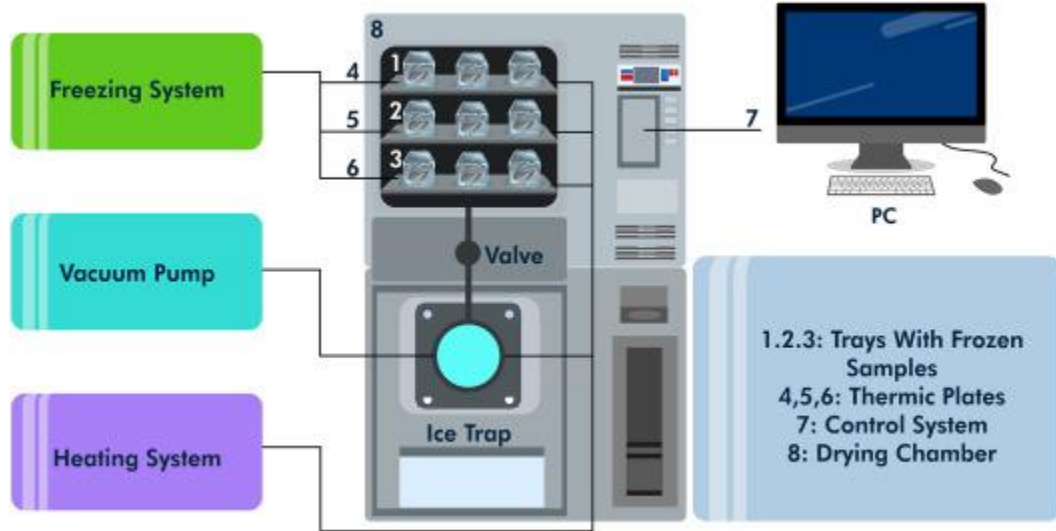
Nutrition

Serving: 4 people | Calories: 269kcal | Carbohydrates: 20g | Protein: 12g | Fat: 16g | Satu

https://www.makeaheadmealmom.com/wprm_print/3761



APPENDIX I COMPONENTS OF A FREEZE DRYER



From Science Direct, Freeze Dryers

<https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/freeze-dryers>

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