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## Bounty from the Bin: A Collection of Recipes Introducing New Uses for Whole Wheat and Triticale Cereal Grains

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# *Bounty from the Bin*

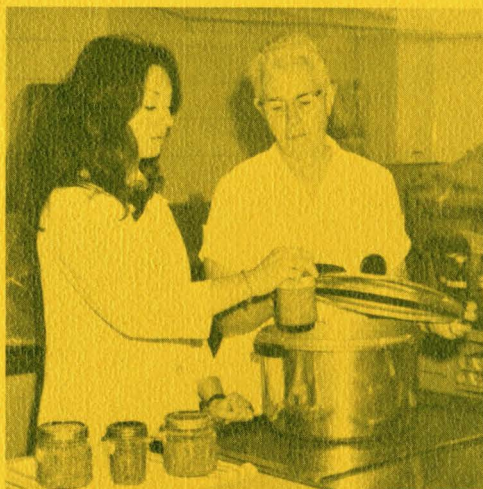
*A collection of recipes introducing new uses for  
whole wheat and triticales cereal grains.*

**South Dakota State University  
Agricultural Experiment Station  
Brookings, South Dakota**



# Contents

Introduction.....	3
Basic Canning Recipe.....	4
Crockery Cookery.....	4
Obtaining the Grains.....	5
Baked Lamb Stew.....	6
Beef and Cheese Hot Dish.....	7
Chicken Casserole.....	7
Ham Casserole.....	7
Ham and Cheese Casserole.....	8
Hamburger Stroganoff.....	8
Hot Cereal.....	5
Hungarian Beef Goulash.....	9
Simple Tuna Casserole.....	9
Spicy Frankfurter Casserole.....	10
Sweet-Sour Pork.....	10
Tangy Lamb Skillet Dish.....	6
Veal Goulash.....	11
Hints and Helps.....	12



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by the Agricultural Experiment Station  
under project H-704  
"Utilization of Cereal Grains and the Edible Legume Proteins  
to Modify Nutritional Quality of Foods."

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# Bounty from the Bin

The word "cereal" is derived from *Cerealia*, the name given ancient Roman ceremonies held in the honor of Ceres, the goddess of grain. Cereals are members of the grass family, grown for their edible seeds. They include wheat, oats, rye, barley, corn, millet and rice. These cereal grains form an important part of the diet for most of the world's population.

The origin of the wheat plant is not known, but evidence indicates that the cultivated "einkorn" (a one-grain wheat) was developed from a wild grass of the arid lands of Asia Minor. Later the Mediterranean region became famous for its wheat production and played a dominant production role during the Roman Empire. After a period of slow progress, wheat commonly became regarded as the best of the cereal grains. The availability of wheat for food was considered a sign of a high stage of civilization, and it has become a world symbol in both the economic and political arena of world affairs.

Wheats have been classified in various ways. Our common wheats have the genus names of *Triticum* and *Vulgare*, which are further classified as hard or soft, red or white, and spring or winter habit wheat. The Durum wheat is considered separately in our midwestern area.

The cereal grain rye was an important food in Europe during the Middle Ages, but later was used only as a feed grain.

Then came a new cereal, "Triticale," the first man-made cereal grain. It is a cross of wheat and rye, and gets its name from the wheat genus (*TRITICUM*) and the rye genus (*SECALE*). The pronunciation is Trit-i-kay-lee.

Triticale was first recognized in 1876 by the Botanical Society of Edinburgh. Research directed toward use of triticale as a commercial crop began at the University of Manitoba in Winnipeg, Canada, about 1954. This work, along with the cooperation of the International Maize and Wheat Improvement Center in Mexico, has led to the development of a successful breeding program.

Triticale tends to be more drought resistant and fertilizer efficient than wheat. It is becoming an important grain in the dry areas of the Middle East, as well as throughout the Plains States of our country.

The flavor of triticale is distinctive, pleasing and can enhance the over-all flavor of a wide variety of cereal-based products. It has a high quality protein, but is lacking in gluten content. In some applications, such as bread doughs, this may limit the amount of triticale which can be used, and will require the addition of wheat gluten for best performance.

Whole grain kernels of wheat and triticale are similar in structure, as sketched in cross-section (Figure 1). The outer bran layers and the germ (indicated by the darker swirl on the right) contain most of the vitamins and minerals. The germ, which is only 2% of the entire kernel, contains the highest quality protein and most of the fat. The endosperm (indicated on the left) is largely starch with some protein, which is different but complementary to the germ's protein. The outer coating and the germ are of unchallenged importance in their nutrient content and incomparable in flavor.



Figure 1.

Wheat, as a cereal, was common fare during the pioneer days when the home-grown grain was cleaned, water added, and simmered over the fire or on the back of the range overnight for a breakfast treat. But, changes in modern cooking have virtually eliminated this long, slow-cooking process.

## *Canning Grains*

To revive those slow-cooked qualities and nutritious eating experiences, extensive work has been done by home economics researchers of the Agricultural Experiment Station at South Dakota State University to develop a canning method for whole kernel wheat and triticale. This research was initiated to produce a product that is tender, yet maintains its whole-kernel characteristics, and is ready to use as a convenience food from the pantry shelf.

Because whole wheat and triticale are accessible to this area, and no special equipment is needed by the homemaker for cleaning and canning these grains, they were the primary subjects of research for developing the canning recipes.

A basic canning procedure was developed which worked well for Durum, hard red spring and the semi-dwarf spring varieties of wheat. The procedure had to be adjusted for triticale, and some adjustments also had to be made when using wide-mouth pint jars instead of regular pint jars.

### *Whole Wheat*

#### **Regular**

½ c. plus 1 rounded tbsp. of whole grain wheat (125 gm)

¼ tsp. salt

1¼ c. hot water

Place clean, dry wheat and salt in clean, dry pint jar. Add hot water (do NOT use softened water), fill to within ½ inch from top of jar, cover and process in pressure cooker at 10 lbs. for 1 hour.

#### **Wide-mouth pints**

¾ c. whole grain wheat (150 gm)

¼ tsp. salt (rounded)

1¼ c. hot water

### *Triticale*

½ c. whole grain triticale (115 gm)

¼ tsp. salt

1¼ c. hot water

Proceed as above.

½ c. plus 2 tbsp. whole grain triticale (130 gm)

¼ tsp. salt (rounded)

1¼ c. hot water

Proceed as above.

## *Crockery Cooking*

As stated before, long slow-cooking of cereal grains on the kitchen range has all but disappeared. However, raw whole cereal grains **require** long, slow cooking to produce a tender, whole-kernel product.

It would be expensive to operate an electric or gas stove for the long periods needed to cook whole cereal grains. But with the advent of electric slow-cooking pots, which are economical to use for long periods, this method of preparing whole cereal grains may now be restored.

Different cooking methods and times were investigated by the home economists. A 2½ quart pot and 4 varieties of whole wheat and triticale were used for the experiments.



The following amounts of grain were considered acceptable by the researchers (the larger amount produced a slightly more tender product.)

Whole grain	200 gm (1 cup)	400 gm (2 cups)
Water	600 ml (2¾ cup)	1200 ml (5½ cups)
Salt	6 gm (1 tsp.)	12 gm (2 tsp.)

The following cooking methods worked equally well.

Method 1: the cereal was cooked for 16 hours at the low setting. Method 2: the cereal was cooked for 2 hours on the high setting, followed by 6 hours at the low temperature.

Your cooking times will vary slightly depending on the type, model number and make of the cooking pot you use. Generally, low heat is 200°F. (93 C) and high is 300°F. (149 C). It's important never to cook food at a temperature of less than 180°F. (82 C) because spoilage may result.

The home economists discovered that a much more tender product is produced when the salt is added toward the end of the cooking period. Since most slow cookers direct you to stir its contents about two hours before serving, this is a good time to add the salt. However, if your schedule doesn't permit this, the salt may be added in the beginning.

Some differences were noted between the different varieties of grain. Hard red spring, hard red winter wheats and triticale were rated very good, but durum wheat was found to have less flavor.

Directions given for slow cookers generally indicate that they cook better when full. However, sometimes a full pot of cereal grain is more than needed for a particular recipe. If you have leftovers, the remaining cereal may be frozen for later use. In any of the recipes included in this bulletin, the slow-cooked cereal product may be substituted for conventionally cooked or canned whole wheat or triticale.

#### **Obtaining the cereal grains**

Now that you're ready to try these new uses for whole kernel cereal products, where are the grains available? Most wheat and triticale growers have these grains in a bin or granary on the farm or ranch. Grain elevators usually have wheat on hand, but not always triticale. Many of the health food stores will also have a supply of whole grain cereals.

After you obtain the grains, some cleaning of weed seeds, hulls and other foreign materials from the cereal grains is needed. When the grain is washed in water, most of the foreign material will float to the top for easy removal.

Grocery stores might not carry whole cereal grains, simply because they don't have a big enough demand for the product. Make your wants known; for as the demand increases, the products will become more available to the homemaker.

Happy, nutritious eating!



### **Hot Whole Grain Cereal**

4-4½ servings

This is a simple, yet good, form of using whole kernel cereals.

1 pt. canned whole wheat or triticale  
cream (½ and ½)  
sugar (white or brown)

Heat canned wheat to near boiling. Spoon into cereal dishes and serve hot with cream and sugar.



### Tangy Lamb Skillet Dish

4 servings

- 1 tbsp. olive oil
- 1-1 $\frac{3}{4}$  lb. lamb, cut into 1-inch cubes
- 1 medium-sized onion, sliced ( $\frac{1}{2}$  c.)
- $\frac{1}{2}$  c. chopped green pepper
- 1 pt. canned wheat
- $\frac{1}{2}$  tsp. dried oregano leaves
- $\frac{1}{4}$  tsp. dried basil leaves
- $\frac{1}{4}$  tsp. paprika
- 1 tsp. salt
- Dash pepper
- 2 beef bouillon cubes
- 1-6 oz. can tomato sauce

Heat oil in skillet over moderately high heat (about 325°F.); add meat cubes and cook until lightly browned on all sides. Remove meat from skillet. Reduce heat to moderate (about 250°F.). Add onion and green pepper and cook just until tender. Add wheat and seasonings; cook over moderately low heat (about 225°F.) until lightly browned. Heat oven to 350°F. Mix meat and wheat mixture together and spoon into a deep 1 $\frac{1}{2}$  quart casserole. Heat tomato sauce in small saucepan, add bouillon and stir until dissolved. Pour tomato sauce with dissolved bouillon over meat and wheat mixture. Cover and bake 1 $\frac{1}{4}$ - to 1 $\frac{1}{2}$  hours, stirring every 15 minutes.

### Baked Lamb Stew

Dissolve the 2 bouillon cubes in 1 $\frac{1}{2}$  c. boiling water, add the tomato sauce and pour over meat and wheat mixture. Cover and bake as above.



## Beef and Cheese Hot Dish

4-6 servings

- 2 tbsp. butter
- ¼ c. flour
- 2 c. milk
- 1 tsp. salt
- ⅛ tsp. pepper
- 1½ c. Swiss cheese, grated
- 2 c. diced cooked beef
- 2 tomatoes, skinned, seeded, and cut in pieces (or ¼ c. tomato puree)
- 8 oz. mushrooms, sliced
- 1 pt. canned wheat
- ¼ c. bread crumbs
- 2 tbsp. butter

Heat 2 tbsp. butter in saucepan, add flour and cook over low heat until almost dry. Add milk, a little at a time, stirring constantly until mixture is smooth and thickened. Season with salt and pepper. Remove from heat, stir in cheese until smooth. Place wheat, beef, tomatoes, and mushrooms in a deep casserole. Add cheese sauce and stir until thoroughly mixed. Sprinkle top with bread crumbs, dot with butter. Bake at 350°F. for 35-45 minutes until top is golden brown.

## Chicken Casserole

4-5 servings

- 2 c. cut-up cooked turkey or chicken
- 1-10½ oz. can condensed cream of mushroom soup
- 1 c. milk
- ⅔ c. chopped celery
- 1 pt. canned wheat
- 2 tbsp. white cooking wine
- 2 tbsp. chopped parsley
- Dash pepper
- 2 tbsp. butter
- ¼ c. dried bread crumbs

About 1 hour and 45 minutes before serving:

Preheat oven to 350°F. In a 2½ quart casserole, stir chicken, undiluted soup, milk, celery, wheat, cooking wine, parsley and pepper. Cover casserole. Bake 1½ hours, stirring occasionally, until mixture is hot and bubbly. Meanwhile, in small saucepan over medium heat, melt butter; stir in bread crumbs; set aside. When casserole is hot and bubbly, uncover; sprinkle with crumb mixture and bake uncovered for 15 minutes or until crumbs are golden.

## Ham Casserole

4-5 servings

- 2 tbsp. butter
- ¼ c. chopped onion
- ¼ c. chopped green pepper
- 1½ c. diced cooked ham
- 1 can cream of mushroom soup
- ½ c. milk
- 1 tbsp. chopped pimiento
- 1 c. grated American cheese
- Dash pepper
- 1 pt. canned wheat

Melt butter, saute onion and green pepper until tender. Add ham, cook a few minutes longer. Heat soup and milk, stir until blended. Mix together ham mixture, soup, pimiento and pepper with canned wheat. Pour mixture into 2 qt. casserole. Bake at 375°F. for 20 minutes.



## Ham and Cheese Casserole

4 servings

- 1 pt. canned wheat
- 2 tsp. vegetable oil
- 2 c. fully cooked ham, cubed
- ½ c. finely chopped onion
- 1 can condensed Cheddar cheese soup
- ½ c. milk

Heat oil in skillet over moderately low heat (about 225°F.). Add ham and onion and cook until onion is tender, stirring occasionally. Add undiluted soup and milk; simmer. Add wheat and simmer a few minutes longer, stirring occasionally. Turn mixture into a shallow 1½ quart casserole. Place under preheated broiler for about 5 minutes, or until top is golden brown.

## Hamburger Stroganoff

5 servings

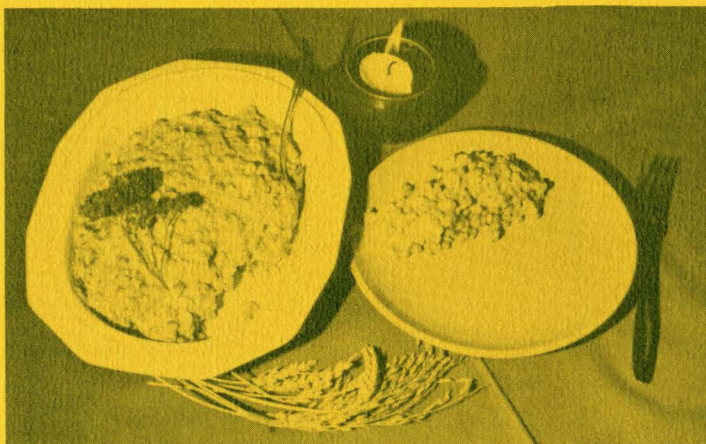
- ¼ c. butter
- ½ c. minced onion
- 1 garlic clove
- 1 lb. lean ground beef
- 1 c. canned mushrooms, sliced
- 2 tbsp. all-purpose flour
- 1 tsp. salt
- ¼ tsp. pepper
- ¼ tsp. paprika
- 1-10½ oz. can condensed cream of chicken soup
- 1 c. sour cream
- Chopped parsley, dill or chives as garnish
- 1 pt. canned wheat

About 40 minutes before serving:

In 12-inch skillet over medium-high heat, melt butter, cook onion and garlic until golden. Stir in ground beef, mushrooms, flour, salt, pepper, and paprika; cook, stirring often, until meat is browned, about 7 minutes. Stir in undiluted soup; heat to boiling. Reduce heat to low and simmer 10 minutes to blend flavors. Stir in sour cream and heat (do not boil); sprinkle with parsley. To serve, spoon mixture over heated canned wheat, garnish with parsley.

### Variation:

Prepare as above, but use only ½ tsp. salt, omit mushrooms, and substitute one 10½ oz. can condensed cream of mushroom soup for cream of chicken soup.



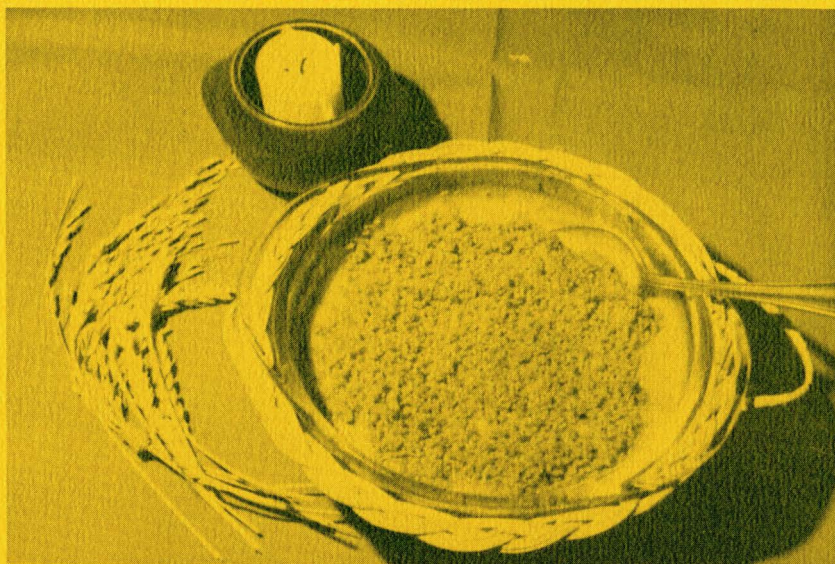
## Hungarian Beef Goulash

4-5 servings

- 1 tbsp. butter
- 4 medium onions, thinly sliced (2 c.)
- 1½ lb. beef stew meat, cut into 1-inch chunks
- 3 tbsp. paprika
- ½ tsp. salt
- 1 bay leaf
- ⅔ c. sour cream
- 1 pt. canned wheat

About 3½ hours before serving:

In Dutch oven over medium-high heat, cook onions in butter stirring occasionally until tender, about 15 minutes. Add beef, paprika, salt and bay leaf. Reduce heat to low; cover and simmer 3 hours or until meat is tender, stirring occasionally (if meat sticks to pan, add one or two tbsp. of water). Discard bay leaf. Stir in sour cream. Serve over heated canned wheat.



## Simple Tuna Casserole

4-5 servings

- 1 pt. canned wheat
- 2-7½oz. cans tuna (or other canned fish)
- 1 c. milk
- Dash pepper
- 1 can cream of celery soup
- 1 c. fine bread crumbs
- 3 tbsp. butter, melted

Spoon wheat into buttered 1½ quart baking dish. Arrange flaked fish on top of wheat. Sprinkle with pepper. Mix soup and milk and pour over fish and wheat. Cover with buttered bread crumbs. Bake at 375°F. for 25 to 30 minutes or until crumbs are golden brown.

### **Variation;**

Use ground beef, buffalo or venison instead of fish. Arrange browned meat on top of wheat and continue as above.



## Spicy Frankfurter Casserole

4 servings

- 1 tbsp. butter
- $\frac{1}{3}$  c. thinly sliced onion
- 2 cans condensed Cheddar cheese soup, undiluted
- $\frac{1}{2}$  c. milk
- 2 tsp. prepared horseradish
- 2 tbsp. chopped pimiento
- 1 pt. canned wheat
- 1 lb. frankfurters

Preheat oven to 400°F. Melt butter in a small saucepan over moderate heat (about 250°F.); add onion and cook until tender. In a bowl mix together cooked onion, cheese soup, milk, mustard, horseradish, pimiento, and wheat. Turn into a shallow, rectangular 2 quart casserole. Arrange frankfurters on top. Bake, uncovered, 25 minutes, or until mixture is hot and bubbly and frankfurters are lightly browned.

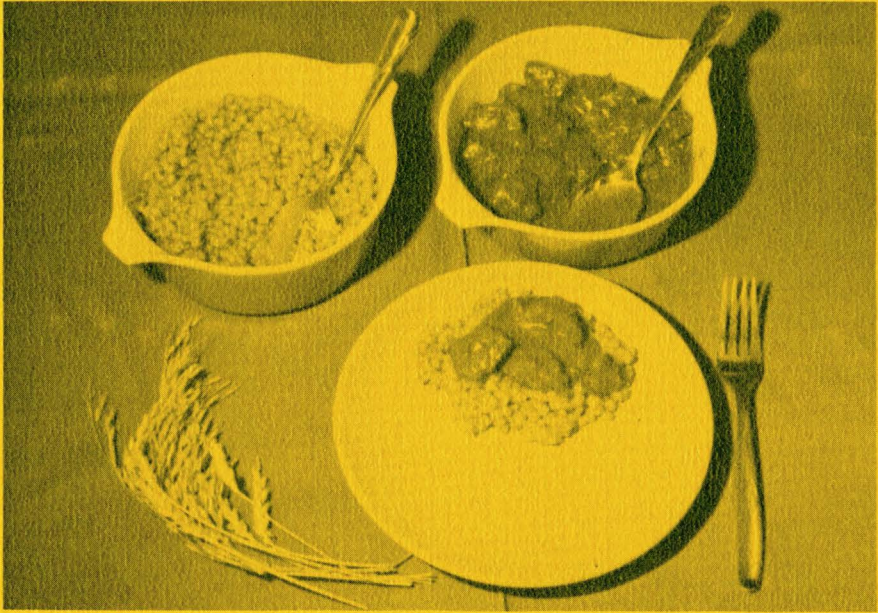
## Sweet-and-Sour Pork

4 servings

- 1 $\frac{1}{3}$ -1 $\frac{1}{2}$  lbs. boneless lean pork shoulder
- 2 tbsp. shortening
- 1-16 oz. can pineapple chunks
- $\frac{1}{2}$  c. water
- 2 tbsp. vinegar
- 1 tsp. soy sauce
- 2 tbsp. firmly packed brown sugar
- 1 tsp. salt
- 1 $\frac{1}{2}$  tbsp. cornstarch
- 1 $\frac{1}{2}$  tbsp. water
- 2 tbsp. thinly sliced onion
- $\frac{1}{2}$  c. thinly sliced green pepper strips
- 2 pt. canned wheat

Cut meat into strips about 2 to 3 inches long and 1 inch wide. Melt shortening in skillet over moderately high heat (about 275°F.) and cook meat until lightly browned. Drain pineapple and mix juice with the  $\frac{1}{2}$  c. water, vinegar, soy sauce, brown sugar and salt. Pour over meat; cover and simmer over low heat (about 200°F.) 1 hour, or until meat is tender. Combine cornstarch and the 1 $\frac{1}{2}$  tbsp. water; add to meat and simmer, stirring constantly, until thickened. Add pineapple chunks, onions, and green pepper. Cover and cook 10 to 15 minutes, until vegetables are tender. Serve over heated canned wheat.





### Veal Goulash

4-6 servings

- 2 tsp. paprika
- 1 tsp. salt
- Dash pepper
- 1 lb. boneless veal shoulder, cubed
- 2 tbsp. vegetable oil
- $\frac{1}{4}$  c. thinly sliced onion
- 1 c. water
- 2 tbsp. tomato paste
- 1 tsp. Worcestershire sauce
- 2 tbsp. flour
- $\frac{1}{4}$  c. water
- 1-2 pts. canned wheat

Mix paprika, salt and pepper; sprinkle meat lightly with mixture. Heat oil in heavy skillet or Dutch oven over moderately high heat (about 300°F.); add meat and cook until lightly browned on all sides. Remove meat; add onion and cook until tender. Reduce heat to low. Add the 1 c. of water, tomato paste, and Worcestershire sauce; blend well. Add meat; cover and simmer 1½ hours, or until meat is tender. Remove meat to serving dish. Mix together  $\frac{1}{4}$  c. water and flour; gradually add to tomato mixture. Cook, stirring constantly, until thickened. Pour over meat. Serve with heated canned wheat.

**Variation:**

Substitute beef cubes for veal.





## Hints and Helps

### Abbreviations:

c. - cup  
tbsp. - tablespoon  
tsp. - teaspoon  
lb. - pound  
oz. - ounce  
med. - medium  
pt. - pint

**Cubed** - to cut into small ( $\frac{1}{4}$ - $\frac{1}{2}$  inch) more or less cubical pieces.

**Chopped** - to cut into small pieces in a random manner.

**Diced** - to cut into small more or less cubical pieces,  $\frac{1}{8}$ - $\frac{1}{4}$  inch. Result is finer than cubed food and coarser than minced.

**Saute** - to fry in shallow fat until light brown.

**Temperatures** - Common temperatures used in cooking - Celsius (Centigrade), Fahrenheit.

Fahrenheit (°F.)	Celsius (°C.)
75	24
150	66
212	100
275	135
300	149
325	163
350	177
375	190
400	204
425	218

### Weights:

1 lb. - 454 grams  
8 oz. - 227 grams  
4 oz. - 113 grams

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