Calculation Methods for Grain Ounce Equivalents for the Preschool Meal Patterns of the School Nutrition Programs

This guidance applies to the U.S. Department of Agriculture's (USDA) meal patterns for preschoolers (ages 1-4) in the National School Lunch Program (NSLP), School Breakfast Program (SBP), Seamless Summer Option (SSO) of the NSLP, and Afterschool Snack Program (ASP) of the NSLP. The SSO follows the NSLP and SBP preschool meal patterns. For information on the preschool meal patterns and crediting foods, refer to the Connecticut State Department of Education's (CSDE) *Menu Planning Guide for the Preschool Meal Patterns of the School Nutrition Programs* and visit the "Grains Component for Preschoolers" section of the CSDE's Meal Patterns for Preschoolers in School Nutrition Programs webpage.

Contents

Overview of Crediting Requirements for Grains 2

Overview of Ounce Equivalents (Oz Eq) 2

Method 1: Weights or Volumes (USDA's Exhibit A Chart) 4

- Using method 1 for commercial products 5
- Using method 1 for foods made from scratch 6

Method 2: Creditable Grains 6

- Using method 2 for commercial products 6
- Using method 2 for foods made from scratch 7

When Method 2 is Required for Commercial Products 8

Choosing a Calculation Method 9

Sample Calculations for Commercial Products in Group A-E 10

- Example 1: Using method 1 for commercial grain products in groups A-E 11
- Example 2: Using method 2 for commercial grain products in groups A-E 12

Sample Calculations for Commercial Products in Group H 13

- Example 3: Using method 1 for commercial grain products in group H 14
- Example 4: Using method 2 for commercial grain products in group H 15

Sample Calculations for Foods Made from Scratch 16

- Method 2 calculation for recipes listing the weight of grain ingredients 16
  - Example 5: Using method 2 for recipes listing the weight of grain ingredients 17
- Method 2 calculation for recipes listing the volume of grain ingredients 17
  - Table 1. Weights of 1 cup of commonly used grain ingredients 19
  - Example 6: Using method 2 for recipes listing the volume of grain ingredients 21

Resources 21

Calculation Methods for Grain Ounce Equivalents for the Preschool Meal Patterns of the School Nutrition Programs

Overview of Crediting Requirements for Grains

To credit as the grains component in the preschool meal patterns, commercial grain products and foods made from scratch must be made with creditable grains. Creditable grains include whole grains, enriched grains, bran (such as oat bran, wheat bran, corn bran, rice bran, and rye bran), and germ (such as wheat germ). Bran and germ credit the same as enriched grains.

Creditable grain foods include commercial grain products and foods made from scratch that are whole grain-rich (WGR) or enriched. Creditable cooked and ready-to-eat (RTE) breakfast cereals include products that are WGR, enriched, or fortified.

The preschool meal patterns require at least one serving of WGR grains per day. The USDA's CACFP best practices recommend at least two servings of WGR grains per day. WGR foods for the preschool meal patterns must contain at least 50 percent whole grains and the remaining grain ingredients must be enriched, bran, or germ. Products that are 100 percent whole grain, such as whole-wheat bread and brown rice, provide the best nutrition and should be served most often.

For guidance on identifying WGR and enriched grains, refer to the CSDE's *Guide to Meeting the Whole Grain-rich Requirement for the Child and Adult Care Food Program* and the CSDE's resources, *Crediting Whole Grains in the School Nutrition Programs*, *Crediting Enriched Grains in the School Nutrition Programs, Crediting Breakfast Cereals in the Preschool Meal Patterns for the School Nutrition Programs*, and *How to Identify Creditable Grains for the Preschool Meal Patterns of the School Nutrition Programs.*

Overview of Ounce Equivalents (Oz Eq)

The required quantities for the grains component are in ounce equivalents (oz eq). The required preschool serving is ½ oz eq for all meals and snacks. The minimum creditable amount is ¼ oz eq.

The USDA allows two methods for determining the oz eq of creditable commercial grain products and standardized recipes. Method 1 (weight or volume) is used for commercial grain products and may also be used for standardized recipes that indicate the weight of the prepared (cooked) serving. Method 2 (creditable grains) is used for standardized recipes and may also be used for commercial grain products that have a product formulation statement (PFS) indicating the weight of creditable grains per serving.

School food authorities (SFAs) may use either method but must document how the crediting information is determined for each grain product and recipe. Method 2 must be used for certain commercial grain products. For more information, refer to "Choosing a Calculation Method" and "When Method 2 is Required for Commercial Products" in this document.

SFAs are not required to use these methods for commercial products with a Child Nutrition (CN) label. CN-labeled products credit toward the grains component based on the stated crediting information for grain oz eq.

CN labels are available only for main dish entrees that contain at least ½ oz eq of the meat/meat alternates component. Some examples include pizza, breaded chicken nuggets, and cheese ravioli. CN-labeled foods also typically indicate the contribution of grains, vegetables, and fruits that are part of these products

For more information on CN labels, refer to the CSDE's resource, *Using Child Nutrition (CN) Labels in the School Nutrition Programs*, and "Module 6: Meal Pattern Documentation" of the CSDE's training program, *What's in a Meal: National School Lunch Program and School Breakfast Program Meal Patterns for Grades K-12*.

> Before determining the oz eq per serving, make sure the commercial grain product or recipe is creditable, i.e., WGR or enriched.

Method 1: Weights or Volumes (USDA's Exhibit A Chart)

Method 1 uses the USDA's chart, *Exhibit A: Grain Requirements for Child Nutrition Programs*, to determine the required weight (groups A-E) or volume (groups H-I) for the grain group where the food belongs. This method is used for commercial grain products and may also be used for standardized recipes if the menu planner knows the weight (grams or ounces) of the prepared (cooked) serving. Some commercial grain products require method 2 and the SFA must obtain a PFS (refer to "When Method 2 is Required for Commercial Products" in this document).

> The required amounts for the grains component listed in Exhibit A are not the same for all Child Nutrition Programs because the meal patterns are different. The CSDE's resource, *Grain Ounce Equivalents for the Preschool Meal Patterns of the School Nutrition Programs,* indicates the Exhibit A grain oz eq that apply to the preschool meal patterns. Groups F and G (grain-based desserts) are not included because grain-based desserts do not credit in the preschool meal patterns.

The amount of a creditable grain food that provides 1 oz eq varies because different types of foods contain different amounts of creditable grains. For example, to credit as 1 oz eq of the grains component, a roll (group B) must weigh 28 grams (1 ounce), a corn muffin (group C) must weigh 34 grams (1.2 ounces), and a blueberry muffin (Group D) must weigh 55 grams (2 ounces).

- **Groups A-E** (**baked goods)** include foods like crackers, breads, rolls, taco shells, muffins, waffles, pancakes, and grain-based desserts, e.g., cookies, cake, granola bars, and pastries. The amount of a food that provides 1 oz eq varies from 22 grams (0.8 ounce) for foods in group A to 69 grams (2.4 ounces) for foods in group E.

- **Group H (cereal grains)** includes foods like pasta, cooked breakfast cereals, and other cereal grains, e.g., amaranth, barley, buckwheat, cornmeal, corn grits, farina, kasha, millet, oats, quinoa, wheat berries, and rolled wheat. These foods require ½ cup cooked or 28 grams (1 ounce) dry to credit as 1 oz eq of the grains component. Cereal grains typically credit based on the cooked serving, but menu planners may choose to credit cereal grains using the dry uncooked weight. Dry cereal grains used as an ingredient in a recipe (such as rolled oats in bread) require 16 grams of creditable grains to credit as 1 oz eq of the grains component. For guidance on crediting cooked breakfast cereals, refer to the CSDE's resource, *Crediting Breakfast Cereals in the Preschool Meal Patterns for the School Nutrition Programs.*

- **Group I (RTE breakfast cereals)** includes cold breakfast cereals such as puffed cereals, round or flaked cereals, and granola. These foods require 1 ounce (28 grams) to credit as 1 oz eq of the grains component. A 1-ounce serving equals 1 cup of flaked or round cereal, 1¼ cups of puffed cereal, and ¼ cup of granola. For guidance on crediting RTE breakfast cereals, refer to the CSDE's resource, *Crediting Breakfast Cereals in the Preschool Meal Patterns for the School Nutrition Programs.*

Using method 1 for commercial products

The product's Nutrition Facts label or PFS must indicate the weight (ounces or grams) of the manufacturer's serving. The tools below help menu planners determine the oz eq contribution of creditable commercial grain products.

- **USDA's Exhibit A Grains Tool:** This online tool of the USDA's *Food Buying Guide for Child Nutrition Programs* (FBG) determines the oz eq of commercial grain products. For more information, refer to the USDA's webinars, *Exhibit A Grains Tool to the Rescue* and *How to Maximize the Exhibit A Grains Tool.*

- **How to Use the Grain Oz Eq Chart for the NSLP and SBP:** The CSDE's resource, *How to Use the Grain Ounce Equivalents Chart for the National School Lunch Program and School Breakfast Program*, reviews the steps for using the Exhibit A quantities to determine the meal pattern contribution of three types of commercial products and standardized recipes. These include grain menu items in groups A-E that contain multiple small pieces per serving (e.g., crackers, hard pretzels, and animal crackers), multiple large pieces per serving (e.g., pancakes, slices of bread, and waffles), and one piece per serving (e.g., muffins, bagels, and rolls). This guidance is also provided in module 13 of the CSDE's training program, *What's in a Meal: National School Lunch Program and School Breakfast Program Meal Patterns for Grades K-12*.

- **CSDE's crediting worksheet for commercial grain products:** The CSDE's Excel worksheet, *Child Care Worksheet 1: Crediting Commercial Grains in the Child and Adult Care Food Program,* determines if a commercial grain product meets the CACFP crediting requirements and WGR criteria, and calculates the oz eq contribution of the serving. Since the preschool meal pattern requirements are the same as the CACFP, SFAs may use this worksheet to determine if commercial grain products comply with the preschool crediting requirements**.**

Using method 1 for foods made from scratch

SFAs must have a standardized recipe on file that indicates the weight of the prepared (cooked) serving. If the standardized recipe does not provide this information, SFAs could determine the average weight per serving by weighing several servings of the recipe. For more information, refer to the CSDE's *Yield Study Data Form for Child Nutrition Programs*.

Method 2: Creditable Grains

Method 2 determines the oz eq for creditable commercial grain products and standardized recipes by calculating the total grams of creditable grains per serving. The grams of creditable grains are obtained from the commercial product's PFS or calculated from the grain quantities in the SFA's standardized recipe. The required grams of creditable grains are different for creditable foods and WGR foods.

- **Creditable foods:** To credit as 1 oz eq of the grains component, foods in groups A-E must contain 16 grams of creditable grains and foods in groups H-I must contain 28 grams of creditable grains.
- **WGR foods:** To credit as 1 oz eq of a WGR food, foods in groups A-E must contain 16 grams of creditable grains (including at least 8 grams of whole grains) and foods in groups H-I must contain 28 grams of creditable grains (including at least 14 grams of whole grains).

> There are some situations when SFAs must use method 2 to determine if a commercial product meets the crediting or WGR criteria for grain menu items (refer to "When Method 2 is Required for Commercial Products" in this document).

Using method 2 for commercial products

SFAs must obtain a PFS from the manufacturer that documents the weight of the creditable grains per serving. For information on PFS forms, refer to the CSDE's resources, *Using Product Formulation Statements in the School Nutrition Programs* and *Accepting Processed Product Documentation in the School Nutrition Programs,* and the USDA's *Product Formulation Statement for Documenting Grains in the Child Nutrition Programs* and *Tips for Evaluating a Manufacturer's Product Formulation Statement.* Additional guidance on documentation for commercial products is available in the "Crediting Commercial Processed

Products in Preschool Menus" section of the CSDE's Meal Patterns for Preschoolers in School Nutrition Programs webpage.

Using method 2 for foods made from scratch

SFAs must have a standardized recipe on file that indicates the weight of each grain ingredient. The grams of creditable grains per serving are determined from the weight of each grain ingredient listed in the standardized recipe. For assistance with recipe calculations, such as converting fractions to decimals, refer to the Institute of Child Nutrition's (ICN) *Basics at a Glance Portion Control Poster* and the decimal equivalents of fractions in the "Introduction" section of the USDA's FBG.

> If the recipe lists grain ingredients by volume (e.g., cups and quarts) instead of weight (pound and ounces), each measurement must be converted to grams (refer to "Method 2 calculation for recipes listing the volume of grain ingredients" in this document).

The tools below help menu planners determine the oz eq contribution of creditable grain recipes.

- **USDA's Recipe Analysis Workbook:** Use the FBG's online Recipe Analysis Workbook to search for ingredients, develop a standardized recipe, and determine the recipe's meal pattern contribution per serving. To access this tool, users must create a free account on the USDA's FBG website.

- **CSDE's crediting worksheet for grain recipes:** The CSDE's Excel worksheet, *Child Care Worksheet 5: Crediting Quantity Recipes for Grains in the Child and Adult Care Food Program,* determines if a quantity recipe meets the CACFP crediting requirements and WGR criteria, and calculates the oz eq contribution of the serving. Since the preschool meal pattern requirements are the same as the CACFP, SFAs may use this worksheet to determine if commercial grain products comply with the preschool crediting requirements**.**

For additional guidance on determining the oz eq of preschool recipes, refer to the USDA's resource, *Determining Ounce Equivalents of Grains in CACFP Recipes*, and visit the "Crediting Foods Made from Scratch in Preschool Menus" section of the CSDE's Meal Patterns for Preschoolers in School Nutrition Programs webpage.

When Method 2 is Required for Commercial Products

SFAs must use method 2 and obtain a PFS from the manufacturer if the product's ingredients statement and packaging do not provide sufficient information to determine if the product meets the crediting requirements or WGR criteria for the preschool meal patterns. A PFS is required for commercial products when any of the situations below apply.

Note: When reviewing the first ingredient on the product's label, water is ignored. For combination foods such as pizza or breaded chicken nuggets, these requirements apply only to the grain portion.

1. The first ingredient is not a creditable grain, but the product contains more than one creditable grain. The PFS must indicate that the combined weight of all creditable grains is the greatest ingredient by weight.

2. *Applies only to WGR foods:* The first ingredient is not a whole grain, but the product contains more than one whole grain. The PFS must indicate that the combined weight of all whole grains is the greatest ingredient by weight.

3. *Applies only to WGR foods*: The first ingredient is a whole grain, and the product contains two or more enriched grains. The PFS must indicate that the weight of the whole grain is equal to more than the combined weight of the enriched grains.

4. *Applies only to WGR foods:* The first ingredient is a flour blend of whole and enriched flour. The PFS must indicate one of the following: the whole grain content is at least 8 grams per oz eq (groups A-E); or the weight of the whole grain in the flour blend is more than the first ingredient (excluding water) listed after the flour blend.

5. A combination food that contains a grain portion does not have a CN label. The PFS must indicate that creditable grains are the greatest ingredient by weight in the grain portion.

6. The manufacturer claims that the product's serving size is less than the required weight or volume in the USDA's Exhibit A chart. The PFS must indicate the grams of each creditable grain per serving and how the product provides that amount according to the FBG or USDA's regulations, guidance, or policies.

7. The product is not listed in the USDA's Exhibit A chart. The PFS must indicate the grams of each creditable grain per serving and how the product provides that amount according to the FBG or USDA's regulations, guidance, or policies.

> If the manufacturer will not supply a PFS or the PFS does not provide the appropriate documentation, the product cannot credit as the grains component in the meal patterns for school nutrition programs.

SFAs must verify the accuracy of the PFS before including the commercial grain product in reimbursable meals and ASP snacks. For specific guidance and examples of each situation that requires a PFS and an example of how to evaluate a grain PFS, refer to the CSDE's resource, *When Commercial Grain Products Require a Product Formulation Statement to Credit in the School Nutrition Programs*.

Crediting documentation must be maintained on file. The CSDE will review this information during the Administrative Review of the school nutrition programs.

Choosing a Calculation Method

SFAs may choose to use either method to determine the oz eq contribution of a grain menu item but must document which method is used for each grain menu item. For some commercial grain products, each method results in a different crediting contribution. For example, a 1-ounce whole-grain bagel might credit as 1 oz eq of the grains component using method 1 (USDA's Exhibit A chart) but might credit as 1½ oz eq using method 2 (creditable grains).

SFAs should use the same calculation method each time the same product is on the menu. For example, if the menu planner uses method 2 (creditable grains) to determine the crediting of a whole-grain bagel, that same bagel should always be credited using method 2. The CSDE strongly recommends choosing one calculation method for consistent crediting. This simplifies menu planning and assists SFAs with documenting compliance for the grains component.

Sample Calculations for Commercial Products in Group A-E

This section demonstrates how to calculate the oz eq of commercial grain products using the appropriate weight for groups A-E in the USDA's Exhibit A chart (method 1) or the weight of creditable grains per serving (method 2). SFAs may also use the USDA's Exhibit A Grains Tool to calculate this information automatically (refer to "Using Method 1 for commercial products" in this document).

Example 1 shows how to use method 1 to calculate the oz eq of commercial grain products in groups A-E. To credit a commercial product using method 1, SFAs must know the weight of the serving. This example is for whole-wheat pancakes, a commercial product in group C.

Example 2 shows a sample calculation for this same product using method 2. To credit a commercial product using method 2, SFAs must obtain a manufacturer's PFS stating the total weight (grams) of all creditable grains in the serving.

These examples show how each method can result in a different crediting contribution for the same product. For some products, each method results in the same crediting contribution. SFAs may use either method but must document how the crediting information was determined (refer to "Choosing a Calculation Method" in this document).

> To determine the meal pattern contribution of a commercial grain product using method 1, menu planners must use the weight (ounces or grams) of one serving from the product's Nutrition Facts label or PFS. If the product lists the serving size in ounces and grams, menu planners may choose to use either one. To convert ounces to grams, multiply ounces by 28.35.

For additional guidance on determining the oz eq contribution of a grain menu item in groups A-E, refer to the CSDE's resource, *How to Use the Grain Ounce Equivalents Chart for the National School Lunch Program and School Breakfast Program*.

Example 1: Using method 1 for commercial grain products in groups A-E

Whole-wheat Pancakes
Manufacturer's serving size:
1 pancake: 1 ounce (28 grams)

Group C (USDA's Exhibit A chart)
1 oz eq = 34 grams or 1.2 ounces

Ingredients: Water, whole-wheat flour, enriched flour (wheat flour, niacin, ferrous sulfate, thiamin mononitrate, riboflavin, folic acid), sugar, canola oil. Contains 2% or less of: leavening (baking soda, sodium aluminum phosphate, monocalcium phosphate), eggs, salt, buttermilk.

Steps to determine oz eq using method 1

1. **List the weight of the manufacturer's serving:** Refer to the product's Nutrition Facts label or PFS (1 ounce = 28.35 grams).

   1 ounce

2. **List the required weight for 1 oz eq of the applicable grain group in the USDA's Exhibit A chart:** Refer to the CSDE's resource, *Grain Ounce Equivalents for the Preschool Meal Patterns of the School Nutrition Programs.* Pancakes are in group C.

   1.2 ounces

3. **Determine the oz eq in one serving of the product:** Divide the weight of the manufacturer's serving (step 1) by the required weight for 1 oz eq (step 2).

   1 ounce divided by 1.2 ounces = 0.83 oz eq per serving (1 pancake)

4. **Meal pattern contribution (oz eq):** Round down the oz eq in step 3 to the nearest ¼ oz eq. For example, 1.49 and 1.27 round down to 1.25 and 1.24 rounds down to 1.

   0.83 oz eq rounds down to 0.75 oz eq per serving (1 pancake)

Example 2: Using method 2 for commercial grain products in groups A-E

Whole-wheat Pancakes
Manufacturer's serving size:
1 pancake: 1 ounce (28 grams)

Creditable grains per serving (from product's PFS)
Whole-wheat flour: 9 grams
Enriched flour: 8 grams

Ingredients: Water, whole-wheat flour, enriched flour (wheat flour, niacin, ferrous sulfate, thiamin mononitrate, riboflavin, folic acid), sugar, canola oil. Contains 2% or less of: leavening (baking soda, sodium aluminum phosphate, monocalcium phosphate), eggs, salt, buttermilk.

Steps to determine oz eq using method 2

1. **List the total weight (grams) of all creditable grains (whole, enriched, bran, and germ) in one serving:** Refer to the product's PFS.

   9 grams whole wheat flour plus 8 grams enriched flour = 17 grams of creditable grains

2. **Determine the oz eq in one serving of the product:** For group C, 16 grams of creditable grains equal 1 oz eq. Divide the total weight (grams) of all creditable grains (step 1) by 16.

   17 grams divided by 16 = 1.06 oz eq per serving (1 pancake)

3. **Meal pattern contribution (oz eq):** Round down the oz eq in step 3 to the nearest ¼ oz eq. For example, 1.49 and 1.27 round down to 1.25 and 1.24 rounds down to 1.

   1.06 oz eq rounds down to 1.0 oz eq per serving (1 pancake)

Sample Calculations for Commercial Products in Group H

This section demonstrates how to calculate the oz eq of commercial grain products using the appropriate weight or volume for groups H in the USDA's Exhibit A chart (method 1) or the weight of creditable grains per serving (method 2). SFAs may also use the USDA's Exhibit A Grains Tool to calculate this information automatically (refer to "Using Method 1 for commercial products" in this document).

Example 3 shows how to use method 1 to calculate the oz eq for a commercial whole-grain pasta product in group H. To credit a commercial product using method 1, SFAs must know the weight of the dry serving or the volume of the cooked serving.

Example 4 shows a sample calculation for this same product using method 2. To credit a commercial product using method 2, SFAs must obtain a manufacturer's PFS stating the total weight (grams) of all creditable grains in the serving.

These examples show how each method can result in the same crediting contribution for a commercial grain product. For some products, each method results in a different crediting contribution. SFAs may use either method but must document how the crediting information was determined (refer to "Choosing a Calculation Method" in this document).

> Cereal grains in group H typically credit based on the **cooked** serving, i.e., ½ cup of cooked cereal credits as 1 oz eq of the grains component. However, the menu planner may choose to calculate the product's oz eq based on the **dry uncooked weight**, i.e., 1 ounce (28 grams) of dry cereal grains credits as 1 oz eq of the grains component. The weight (ounces or grams) of one serving must be determined from the commercial product's Nutrition Facts label or the manufacturer's PFS. If the product lists the serving size in ounces and grams, the menu planner may choose to use either one.

Example 3: Using method 1 for commercial grain products in group H

Whole-grain Pasta
Manufacturer's serving size:
32 grams dry (½ cup cooked)

Ingredients: Whole-grain durum wheat flour, enriched wheat flour.

Group H (USDA's Exhibit A chart)
1 oz eq = ½ cup cooked or 28 grams dry

Steps to determine oz eq using method 1

1. **List the weight of the manufacturer's serving from the product's Nutrition Facts label or PFS:** To convert ounces to gram or grams to ounces, use the conversion factor of 1 ounce equals 28.35 grams.

   32 grams

2. **List the required weight for 1 oz eq of the applicable grain group in the USDA's Exhibit A chart:** Refer to the CSDE's resource, *Grain Ounce Equivalents for the Preschool Meal Patterns of the School Nutrition Programs.* Pasta is in group H.

   28 grams

3. **Determine the oz eq in one serving of the product:** Divide the weight of the manufacturer's serving (step 1) by the required uncooked (dry) weight for 1 oz eq (step 2).

   32 grams divided by 28 = 1.14 oz eq per serving (½ cup cooked pasta)

4. **Meal pattern contribution (oz eq):** Round down the oz eq in step 3 to the nearest ¼ oz eq. For example, 1.49 and 1.27 round down to 1.25 and 1.24 rounds down to 1.

   1.14 oz eq rounds down to 1.0 oz eq per serving (½ cup cooked pasta)

Example 4: Using method 2 for commercial grain products in group H

Whole-grain Pasta
Manufacturer's serving size:
32 grams dry (½ cup cooked)

Creditable grains per serving (from product's PFS)
Whole-wheat flour: 14 grams
Enriched flour: 12 grams

Ingredients: Water, whole-wheat flour, enriched flour (wheat flour, niacin, ferrous sulfate, thiamin mononitrate, riboflavin, folic acid), sugar, canola oil. Contains 2% or less of: leavening (baking soda, sodium aluminum phosphate, monocalcium phosphate), eggs, salt, buttermilk.

Steps to determine oz eq using method 2

1. **List the total weight (grams) of all creditable grains (whole, enriched, bran, and germ) in one serving:** Refer to the product's PFS.

   14 grams whole wheat flour plus 12 grams enriched flour = 26 grams of creditable grains

2. **Determine the oz eq in one serving of the product:** For group H, 28 grams of creditable grains equal 1 oz eq. Divide the total weight (grams) of all creditable grains (step 1) by 28.

   26 grams divided by 28 = 0.93 oz eq per serving (½ cup cooked pasta)

3. **Meal pattern contribution (oz eq):** Round down the oz eq in step 3 to the nearest ¼ oz eq. For example, 1.49 and 1.27 round down to 1.25 and 1.24 rounds down to 1.

   0.93 oz eq rounds down to 1.0 oz eq per serving (½ cup cooked pasta)

Sample Calculations for Foods Made from Scratch

SFAs must have standardized recipes on file to document the meal pattern contribution of grain foods made from scratch, such as breads, rolls, muffins, pizza dough, and pancakes. This section demonstrates how to calculate the oz eq of standardized recipes using the weight of creditable grains per serving (method 2). SFAs may also use the USDA's Recipe Analysis Workbook to calculate this information automatically (refer to "Using method 2 for foods made from scratch" in this document).

> Method 1 cannot be used for foods made from scratch in groups A-E unless the SFA knows the serving weight. If the standardized recipe does not provide this information, SFAs could determine the average serving weight by weighing several portions (refer to the CSDE's *Yield Study Data Form for Child Nutrition Programs*). If the serving weight cannot be determined, the creditable grains method must be used to determine the standardized recipe's oz eq contribution.

SFAs do not need to calculate oz eq for grain foods prepared from the USDA's recipes for Child Nutrition Programs. These standardized recipes specify the meal pattern crediting information per serving. For links to the USDA's recipes, visit the Institute of Child Nutrition's (ICN) Child Nutrition Recipe Box and the "Recipes" section of the CSDE's Menu Planning for Child Nutrition Programs webpage. For information on standardized recipes, visit the "Crediting Foods Made from Scratch" section of the CSDE's Crediting Foods in School Nutrition Programs webpage.

Method 2 calculation for recipes listing the weight of grain ingredients

Example 5 shows how to use method 2 to calculate the oz eq for a standardized multi-grain bread recipe that lists the weight of the grain ingredients. Bread is in group B of the USDA's Exhibit A chart and requires 16 grams of creditable grains to credit as 1 oz eq of the grains component. To credit as 1 oz eq of a WGR food, the 16 grams of creditable grains must include at least 8 grams of whole grains.

Note: Dry cereal grains used as an ingredient in a recipe (such as rolled oats and cornmeal) credit the same as groups A-E; 16 grams credit as 1 oz eq of the grains component.

Calculation Methods for Grain Ounce Equivalents for the Preschool Meal Patterns of the School Nutrition Programs

Example 5: Using method 2 for recipes listing the weight of grain ingredients

WGR standardized recipe for multi-grain bread
Yield: 100 servings
Serving size: 1 piece

Grain ingredients:
Whole-wheat flour: 8 ounces (0.5 pound)
Rolled oats: 1 pound 2 ounces (1.125 pounds)
Enriched flour: 1 pound
Enriched cornmeal: 8 ounces (0.5 pound)

Steps to determine oz eq using method 2

1. **Determine the total weight (pounds) of all creditable grains in the recipe:** Convert ounces to pounds (16 ounces = 1 pound). Convert fractions to decimals, e.g., 1¾ pounds = 1.75 pounds.

   Whole grains: 0.5 pound whole-wheat flour plus 1.125 pounds rolled oats = 1.625 pounds

   Enriched grains: 1 pound enriched flour plus 0.5 pound enriched cornmeal = 1.5 pounds

   Total creditable grains = 3.125 pounds

2. **Determine the total grams of creditable grains in the recipe:** One pound equals 453.6 grams. Multiply the total pounds of creditable grains (step 1) by 453.6.

   3.125 pounds multiplied by 453.6 = 1417.5 grams of creditable grains

3. **List the number of servings in the recipe (yield):** 100 servings

4. **Determine the grams of creditable grains per recipe serving:** Divide the total grams of creditable grains (step 2) by the number of servings (step 3).

   1417.5 grams divided by 100 servings = 14.174 grams of creditable grains per serving (1 piece)

5. **Determine the oz eq per recipe serving:** For creditable grains in recipes, 16 grams = 1 oz eq. Divide the grams of creditable grains per serving (step 4) by 16.

   14.174 grams divided by 16 = 0.89 oz eq per serving (1 piece)

6. **Meal pattern contribution (oz eq):** Round down the oz eq in step 5 to the nearest ¼ oz eq. For example, 1.49 and 1.27 round down to 1.25 and 1.24 rounds down to 1.

   0.89 oz eq rounds down to 0.75 oz eq per serving (1 piece)

Method 2 calculation for recipes listing the volume of grain ingredients

Standardized recipes list ingredients by volume (e.g., cups and quarts) and weight (e.g., pounds and ounces). Weight is the most accurate measure. Recipes that are not standardized (such as recipes used at home) typically list ingredients only by volume. SFAs may use any of the methods below to convert the volume of a recipe's grain ingredients to weight (grams).

1. **Nutrition Facts label:** Use the manufacturer's serving size information on the Nutrition Facts label for the grain ingredient, e.g., whole-wheat flour, enriched flour, or whole-grain cornmeal. Multiply the grams per cup (indicated on the Nutrition Facts label) by the number of cups used in the recipe. The example below shows how to use the Nutrition Facts label to determine the weight of the grain ingredients in a recipe that contains 2 cups of whole-wheat flour and 2 cups of enriched flour.

   - **Whole wheat flour:** The Nutrition Facts label for the whole-wheat flour states that ¼ cup weighs 32 grams, which equals 128 grams per cup. Multiply the grams per cup (128 grams) by the number of cups used in the recipe (2 cups) to determine the total weight of the grain ingredient in the recipe (256 grams).

   - **Enriched flour:** The Nutrition Facts label for the enriched flour states that ¼ cup weighs 30 grams, which equals 120 grams per cup. Multiply the weight per cup (120 grams) by the amount of enriched flour used in the recipe (2 cups) to determine the weight of the enriched flour used in the recipe (240 grams).

2. **Nutrient database:** Search the USDA's FoodData Central nutrient database for grain ingredients, such as whole-wheat flour or yellow cornmeal. Enter "1" in the data field for the cup measurement, and the database will provide the weight of 1 cup of that ingredient.

3. **Volume equivalent chart:** Use volume equivalent charts that list the weight of 1 cup of grain ingredients. Table 1 shows the weight per cup for some commonly used grain ingredients.

4. **Yield study:** Determine the average weight of 1 cup of the grain ingredient by measuring and weighing several samples. For more information, refer to the CSDE's *Yield Study Data Form for Child Nutrition Programs*.

Example 6 shows how to use method 2 to calculate the grains/breads servings for a recipe that lists the grain ingredients in cups, using the weights from the table below.

Table 1. Weights of 1 cup of commonly used grain ingredients [1]

Food item	Weight (grams) per cup
Barley, flour or meal [2]	148
Barley, hulled [2]	184
Barley, pearled, uncooked [2]	200
Barley, pearled, cooked [2]	157
Breadcrumbs, dry, grated, plain [2]	108
Breadcrumbs, plain, dry, grated, seasoned [2]	120
Breadcrumbs, plain soft, white [2]	45
Bulgur, uncooked [2]	140
Bulgur, cooked [2]	182
Cereal, General Mills Cheerios [3]	28
Cereal, General Mills Corn Chex [3]	31
Cereal, General Mills Rice Chex [3]	27
Cereal, General Mills Wheat Chex [3]	47
Cereal, General Mills Wheaties [3]	36
Cereal, Kellogg's All-Bran Bran Buds [4]	90
Cereal, Kellogg's All-Bran Original [4]	62
Cereal, Kellogg's Corn Flakes crumbs [4]	88
Cereal, Kellogg's Corn Flakes, whole [4]	28
Cereal, Kellogg's Rice Krispies [5]	26
Cereal, Quaker Puffed Rice [5]	14
Cereal, Quaker Puffed Wheat [5]	28
Cornmeal, enriched, uncooked, yellow, degerminated [2]	157
Cornmeal, enriched, uncooked, yellow, whole grain [2]	122
Cracker crumbs, graham, crushed [2]	84
Cracker crumbs, snack, standard snack-type, regular, crushed [2]	52
Flour, buckwheat, whole groats [2]	120
Flour, corn, whole grain, yellow [2]	117

Calculation Methods for Grain Ounce Equivalents for the Preschool Meal Patterns of the School Nutrition Programs

Food item	Weight (grams) per cup
Flour, rice, brown [2]	158
Flour, rice, white [2]	158
Flour, rye, dark [2]	128
Flour, rye, light [2]	102
Flour, wheat, white, all-purpose enriched, bleached [2]	125
Flour, wheat, white, all-purpose enriched, unbleached [2]	125
Flour, wheat, white, bread, enriched [2]	137
Flour, wheat, white, cake, enriched, unsifted, dipped [2]	137
Flour, wheat, white, self-rising, enriched [2]	125
Flour, wheat, whole grain [2]	120
Wheat germ, uncooked, plain [2]	88
Wheat germ, toasted, plain [2]	115
Oat bran, raw [2]	94
Oat bran, cooked [2]	219
Oats, rolled, quick, uncooked [2]	81
Oats, rolled, regular, uncooked [2]	81

[1] The use of brand-name products is solely for clarification regarding serving sizes and does not constitute approval or endorsement by the USDA or CSDE. The actual weight of 1 cup may be more or less than the weights in this chart, depending on the measuring method used, e.g., stirred or unstirred, sifted or unsifted, spooned or dipped, and coarsely or finely crushed. For the most accurate conversion of volume to weight, calculate the average weight of 1 cup of the ingredient by measuring and weighing several samples. For more information, refer to the CSDE's *Yield Study Data Form for Child Nutrition Programs.*

[2] USDA's FoodData Central database (Standard Reference (SR) Legacy Data): https://fdc.nal.usda.gov/

[3] General Mills Cereals: https://www.generalmills.com/food-we-make/brands

[4] Kellogg's Cereals: https://www.wkkellogg.com/en-us/our-foods/our-brands.html

[5] Quaker Cereals: https://www.quakeroats.com/products

Example 6: Using method 2 for recipes listing the volume of grain ingredients

WGR standardized recipe for multi-grain bread

Yield: 25 servings
Serving size: 1 piece

Whole-wheat flour, 2 cups
Rolled oats, ¾ cup
All-purpose enriched flour, 2 cups
Enriched cornmeal, ¼ cup

1. **Determine the total weight (grams) of all creditable grains in the recipe:** Use any of the following: Nutrition Facts label; nutrient database; volume equivalent chart; or yield study (refer to "Method 2 calculation for recipes listing the volume of grain ingredients" in this document). Convert fractions to decimals if needed, e.g., 1¾ pounds = 1.75 pounds.

   The chart below uses table 1 to determine the grams per cup for each ingredient. The recipe contains 581.25 grams of creditable grains.

Grain ingredient	Measure	Grams per cup (table 1)	Weight (grams)
Whole-wheat flour	2 cups	X 120 =	240.00
Rolled oats	¾ cup	X 81 =	60.75
Enriched flour	2 cups	X 125 =	250.00
Enriched cornmeal	¼ cup	X 122 =	30.5
		Total weight (grams):	**581.25**

2. **List the number of servings in the recipe (yield):**

   25 servings

3. **Determine the grams of creditable grains per serving:** Divide the total grams of creditable grains (step 1) by the number of servings (step 2).

   581.25 grams divided by 25 servings = 23.25 grams of creditable grains per recipe serving (1 piece)

4. **Determine the oz eq per serving:** For creditable grains in recipes, 16 grams = 1 oz eq. Divide the grams of creditable grains per serving (step 3) by 16.

   23.25 grams divided by 16 = 1.45 oz eq per recipe serving (1 piece)

5. **Meal pattern contribution (oz eq):** Round down the oz eq in step 4 to the nearest ¼ oz eq. For example, 1.49 and 1.27 round down to 1.25 and 1.24 rounds down to 1.

   1.45 oz eq rounds down to 1.25 oz eq per recipe serving (1 piece)

Resources

Accepting Processed Product Documentation in the School Nutrition Programs (CSDE):
https://portal.ct.gov/-/media/sde/nutrition/nslp/crediting/accepting_processed_product_documentation_snp.pdf

Basics at a Glance Portion Control Poster (Institute of Child Nutrition):
https://theicn.org/icn-resources-a-z/basics-at-a-glance/

Calculating Sugar Limits for Breakfast Cereals in the CACFP – Handouts in English and Spanish (USDA):
https://www.fns.usda.gov/tn/calculating-sugar-limits-breakfast-cereals-cacfp

Choose Breakfast Cereals that are Lower in Sugar – Handouts, training slides, and webinars in English and Spanish (USDA):
https://www.fns.usda.gov/tn/choose-breakfast-cereals-are-lower-sugar

Crediting Breakfast Cereals in the Preschool Meal Patterns for the School Nutrition Programs:
https://portal.ct.gov/-/media/sde/nutrition/nslp/crediting/credit_cereals_snp_preschool.pdf

Crediting Enriched Grains in the School Nutrition Programs (CSDE):
https://portal.ct.gov/-/media/sde/nutrition/nslp/crediting/credit_enriched_grains_snp.pdf

Crediting Whole Grains in the School Nutrition Programs (CSDE):
https://portal.ct.gov/-/media/sde/nutrition/nslp/crediting/credit_whole_grains_snp.pdf

Exhibit A: Grain Requirements for Child Nutrition Programs (USDA):
https://foodbuyingguide.fns.usda.gov/Content/TablesFBG/ExhibitA.pdf

Food Buying Guide Exhibit A Grains Tool (USDA):
https://foodbuyingguide.fns.usda.gov/ExhibitATool/Index

Food Buying Guide Section 4: Overview of Crediting Requirements for the Grains Component (USDA):
https://foodbuyingguide.fns.usda.gov/Content/TablesFBG/USDA_FBG_Section4_Grains.pdf

Food Buying Guide Section 4: Yield Table for Grains (USDA):
https://foodbuyingguide.fns.usda.gov/files/Reports/USDA_FBG_Section4_GrainsYieldTable.pdf

FoodData Central (USDA):
https://fdc.nal.usda.gov/

Grain Ounce Equivalents for the Preschool Meal Patterns of the School Nutrition Programs (CSDE):
https://portal.ct.gov/-/media/sde/nutrition/nslp/preschool/grain_oz_eq_snp_preschool.pdf

Grains Component for Preschoolers (CSDE's Meal Patterns for Preschoolers in School Nutrition Programs webpage):
https://portal.ct.gov/sde/nutrition/meal-patterns-preschoolers-in-school-nutrition-programs/related-resources#Grains

Guide to Meeting the Whole Grain-rich Requirement for the Child and Adult Care Food Program (CSDE):
https://portal.ct.gov/-/media/sde/nutrition/cacfp/crediting/wgr_requirement_cacfp.pdf

How to Identify Creditable Grains for the Preschool Meal Patterns of the School Nutrition Programs (CSDE):
https://portal.ct.gov/-/media/sde/nutrition/nslp/crediting/identify_creditable_grains_snp_preschool.pdf

How to Spot Whole Grain-Rich Foods for the CACFP (USDA):
https://www.fns.usda.gov/tn/how-spot-whole-grain-rich-foods-cacfp

How to Use the Grain Ounce Equivalents Chart for the National School Lunch Program and School Breakfast Program (CSDE):
https://portal.ct.gov/-/media/sde/nutrition/nslp/crediting/how_to_use_ounce_equivalents_chart.pdf

Identifying Whole Grain-rich Foods for the CACFP (USDA):
https://www.fns.usda.gov/tn/identifying-whole-grain-rich-foods-cacfp

Meal Patterns for Preschoolers in School Nutrition Programs (CSDE webpage):
https://portal.ct.gov/sde/nutrition/meal-patterns-preschoolers-in-school-nutrition-programs/documents

Menu Planning Guide for the Preschool Meal Patterns of the School Nutrition Programs (CSDE):
https://portal.ct.gov/-/media/sde/nutrition/nslp/preschool/menu_planning_guide_preschool.pdf

Product Formulation Statement for Documenting Grains in Child Nutrition Programs (USDA):
https://www.fns.usda.gov/sites/default/files/resource-files/PFS_Grains_Oz_Eq_Fillable_508.pdf

Product Formulation Statement for Documenting Grains in Child Nutrition Programs – Completed Sample (USDA):
https://www.fns.usda.gov/sites/default/files/resource-files/PFS_Example_Grains_Oz_Eq.pdf

Recipe Analysis Workbook (USDA's Food Buying Guide for Child Nutrition Programs):
https://www.fns.usda.gov/tn/food-buying-guide-interactive-web-based-tool

Standardized Recipe Form for School Nutrition Programs (CSDE):
https://portal.ct.gov/-/media/sde/nutrition/nslp/crediting/standardized_recipe_form_schools.docx

Tips for Evaluating a Manufacturer's Product Formulation Statement (USDA):
https://fns-prod.azureedge.us/sites/default/files/resource-files/manufacturerPFStipsheet.pdf

USDA Memo CACFP 09-2018: Grain Requirements in the Child and Adult Care Food Program; Questions and Answers:
https://www.fns.usda.gov/cacfp/grain-requirements-cacfp-questions-and-answers

USDA Memo CACFP 15-2016: Optional Best Practices to Further Improve Nutrition in the CACFP:
https://www.fns.usda.gov/cacfp/optional-best-practices-further-improve-nutrition-cacfp

USDA Memo SP 34-2019, CACFP 15-2019, and SFSP 15-2019: Crediting Coconut, Hominy, Corn Masa, and Masa Harina in the Child Nutrition Programs:
https://www.fns.usda.gov/cn/crediting-coconut-hominy-corn-masa-and-masa-harina-child-nutrition-programs

Using Child Nutrition (CN) Labels in the School Nutrition Programs (CDSE):
https://portal.ct.gov/-/media/sde/nutrition/nslp/crediting/cn_labels_snp.pdf

Using Product Formulation Statements in the School Nutrition Programs (CSDE):
https://portal.ct.gov/-/media/sde/nutrition/nslp/crediting/product_formulation_statements.pdf

What's in a Meal Module 6: Meal Pattern Documentation (CSDE's Training Program, What's in a Meal: National School Lunch Program and School Breakfast Program Meal Patterns for Grades K-12):
https://portal.ct.gov/sde/nutrition/meal-pattern-training-materials

When Commercial Grain Products Require a Product Formulation Statement to Credit in the School Nutrition Programs (CSDE):
https://portal.ct.gov/-/media/sde/nutrition/nslp/crediting/when_commercial_grain_products_require_pfs_snp.pdf

Yield Study Data Form for Child Nutrition Programs (CSDE):
https://portal.ct.gov/-/media/sde/nutrition/nslp/crediting/yield_study_form.pdf.

Calculation Methods for Grain Ounce Equivalents for the Preschool Meal Patterns of the School Nutrition Programs

For more information, visit the "Grains Component" section of the CSDE's Meal Patterns for Preschoolers in School Nutrition Programs webpage or contact the school nutrition programs staff at the Connecticut State Department of Education, Bureau of Child Nutrition Programs, 450 Columbus Boulevard, Suite 504, Hartford, CT 06103-1841.This document is available at https://portal.ct.gov/-/media/sde/nutrition/nslp/crediting/grain_calculation_snp_preschool.pdf.

In accordance with federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, this institution is prohibited from discriminating on the basis of race, color, national origin, sex (including gender identity and sexual orientation), disability, age, or reprisal or retaliation for prior civil rights activity.

Program information may be made available in languages other than English. Persons with disabilities who require alternative means of communication to obtain program information (e.g., Braille, large print, audiotape, American Sign Language), should contact the responsible state or local agency that administers the program or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339.

To file a program discrimination complaint, a Complainant should complete a Form AD-3027, USDA Program Discrimination Complaint Form which can be obtained online at: https://www.usda.gov/sites/default/files/documents/ad-3027.pdf, from any USDA office, by calling (866) 632-9992, or by writing a letter addressed to USDA. The letter must contain the complainant's name, address, telephone number, and a written description of the alleged discriminatory action in sufficient detail to inform the Assistant Secretary for Civil Rights (ASCR) about the nature and date of an alleged civil rights violation. The completed AD-3027 form or letter must be submitted to USDA by:

1. mail: U.S. Department of Agriculture
   Office of the Assistant Secretary for Civil Rights
   1400 Independence Avenue, SW
   Washington, D.C. 20250-9410; or
2. fax: (833) 256-1665 or (202) 690-7442; or
3. email: program.intake@usda.gov

This institution is an equal opportunity provider.

The Connecticut State Department of Education is committed to a policy of equal opportunity/affirmative action for all qualified persons. The Connecticut Department of Education does not discriminate in any employment practice, education program, or educational activity on the basis of race; color; religious creed; age; sex; pregnancy; sexual orientation; workplace hazards to reproductive systems, gender identity or expression; marital status; national origin; ancestry; retaliation for previously opposed discrimination or coercion, intellectual disability; genetic information; learning disability; physical disability (including, but not limited to, blindness); mental disability (past/present history thereof); military or veteran status; status as a victim of domestic violence; or criminal record in state employment, unless there is a bona fide occupational qualification excluding persons in any of the aforementioned protected classes. Inquiries regarding the Connecticut State Department of Education's nondiscrimination policies should be directed to: Attorney Louis Todisco, Connecticut State Department of Education, by mail 450 Columbus Boulevard, Hartford, CT 06103-1841; or by telephone 860-713-6594; or by email louis.todisco@ct.gov.

CSDE
CONNECTICUT STATE DEPARTMENT OF EDUCATION