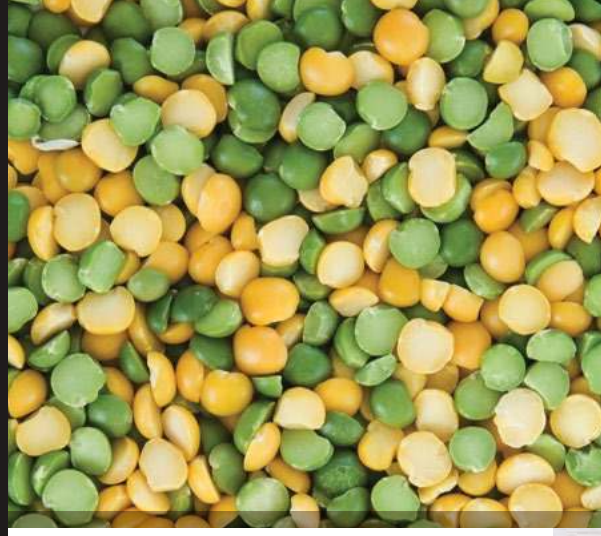


PULSES

# DRY PEAS

## *Ingredients and Applications*

Cultivated peas are classified into two types: garden peas (*Pisum sativum ssp. hortense*), which are identified by the wrinkled nature of their seed and cotyledon, and field peas (*Pisum sativum ssp. arvense*), also known as dry peas. This second type is distinguished by its smooth seed surface. The two types are genetically different and produce starches with different granular morphologies and characteristics.

The two most common varieties of dry peas are green and yellow peas. Split peas are simply dry peas (green, yellow or red) that have been split. Green split peas have a stronger flavor than yellow split peas, which have a milder, slightly sweet flavor.

**Whole Green Peas**

**Split Green Peas**

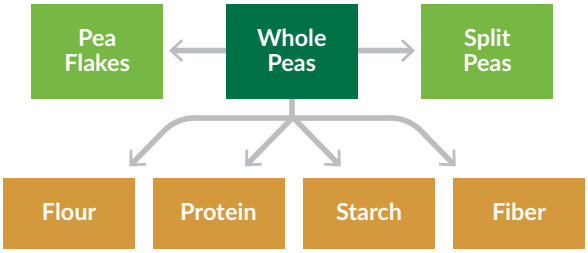
**Yellow Whole Peas**

**Yellow Split Peas**

## APPLICATIONS

Dry peas can be hydrated by soaking, and then either cooked, canned or frozen. Applications for canned or frozen peas include soups, stir-fry dishes, pot pies, salads and casseroles. Most dry peas are put through the splitting process and the split peas are then used in the popular North American dish, split pea soup. In many Asian countries, peas are roasted, salted and consumed as snacks. In parts of the Mediterranean, they are added to meat and potatoes to make a hearty stew.

Dry pea flour also has many uses worldwide. It is valued not only as a vegetable protein source, but also, in part, for its unique functional properties.




### DRY PEA FLOUR ANALYSIS
*(Value Per 100 Grams)*

| NUTRIENTS | DRY PEA | % DAILY VALUE |
|---|---|---|
| Calories (kcal) | 356.0 | |
| Calories from Fat (kcal) | 20.0 | |
| Fat (g) | 2.2 | 3 |
| Sautrated Fat (g) | 0.0 | |
| Trans Fatty Acid (g) | 0.0 | |
| Cholesterol (mg) | 0.0 | |
| Sodium (mg) | 15.0 | 1 |
| Carbohydrates (g) | 65.0 | 22 |
| Dietary Fiber (g) | 25.5 | 102 |
| Total Sugars (g) | 8.0 | |
| Protein (g) | 23.5 | 47 |
| Calcium (mg) | 55.0 | 6 |
| Iron (mg) | 4.4 | 25 |
| Potassium (mg) | 981.0 | 28 |
| Zinc (mg) | 3.0 | 20 |
| Vitamin A - IU (IU) | 149.0 | 3 |
| Vitamin C (mg) | 1.8 | 3 |
| Thiamin (mg) | 0.7 | 48 |
| Riboflavin (mg) | 0.2 | 13 |
| Niacin (mg) | 2.9 | 14 |
| Vitamin B-6 (mg) | 0.2 | 9 |
| "Folate, total (mcg)" | 274.0 | 69 |

*Compiled from the data provided by USDA database and ESHA Genesis SQL software*

## FLOUR

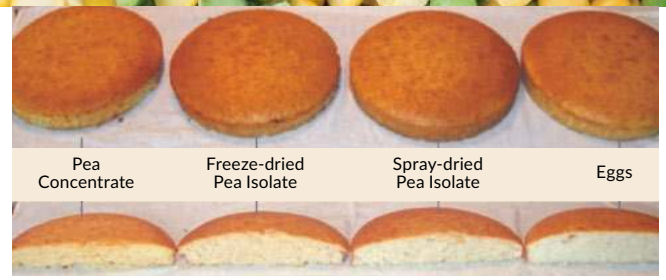
**Raw, pre-gelatinized flour, and flour made from peas that were heat processed before milling offer differences in flavor and functionalities.**

- **Raw (split/whole)**
  Anti-nutritive factors in pea flour such as polyphenols, phytic acid and trypsin inhibitors, along with color and flavor, can limit the use of raw pea flour as an ingredient. Raw pea flour is less common for applications that undergo less extensive heat treatment, such as bakery and meat products. Dry peas and other pulses can be treated to reduce the content of these anti-nutritive factors and to improve the flavor and nutritional value.

**TIP:** *Application determines the type of flour used. Know your application!*

- **Pre-gelatinized (split/whole)**
  Treating raw pulse flour by heating partially gelatinizes the starches, inactivates enzymes, increases shelf-life, and improves flavor. These attributes make pre-gelatinized pulse flour suitable for some applications. Differences in size, form, and distribution of starch granules in the flours and to the internal arrangement of starch within the granules causes the gelatinization temperatures to be different among different types of pulses. Low protein and high amylose starches require high inputs of energy to undergo starch gelatinization. Low amylopectin starch has a higher gelatinization temperature, and is more resistant to enzyme and acid digestion compared to other starches. Pre-gelatinized pea flour serves as an effective flavor carrier, ideal for making more nutritious flatbreads, tortillas, pita breads, crackers, cookies, energy bars and extruded snacks. It also enhances dough yield, firmness and texture.

***Dry peas offer twice the protein of cereal grains, delivering 8 grams of high quality, low-fat, and all-vegetable protein per ¼ cup. Rich in lysine, dry peas and pea flour provide an amino acid profile that complements cereal grain proteins. Pea flour is also rich in slowly digestible starch and resistant starch, which contributes to its low glycemic index.***




*White cakes prepared from pea concentrate, pea isolates and eggs. The bottom row represents the cross-section of the corresponding cakes.*
**Northern Pulse Growers Association**

## PROTEIN

Pea protein (concentrate or isolate) has found its way into healthy, protein-fortified or gluten-free baked goods, snacks, cereals, pastas, energy bars and beverages. Pea protein is recognized as high quality protein with an amino acid balance that complements other common ingredients such as wheat, soy or rice protein.

## STARCH

Pea starch is a great alternative to chemically modified starch, due to its high amylose content. Gels can be prepared from pea starch with about 50 % less starch in comparison to corn starch.
Pea starch can be used to modify the texture of frozen foods, extruded snacks, pasta, noodles, cookies, crackers, sauces and soups. A starch-based texturizing agent has been produced from high-amylose pulse starch. The aim of texturing agents is to create fat-like attributes like structure, viscosity, smoothness and opacity. This can reduce and/or replace the actual fat content in foods, including pourable salad dressings, yogurt, cottage cheese, sour cream, cream cheese, peanut butter, frosting, cheesecake, mousse and sauces.

## FIBER

Pea fiber fractions offer bakers a natural, more economical and nutritious alternative to gums. While enhancing dough yield, pea fiber fortification can also modify texture, create a full-bodied mouth feel, improve uniformity and consistency and reduce breakage in bars and cookies. Traditionally derived from the hull portion of the seed, pea fiber is 85% soluble and 15% insoluble fiber. Its high (20:1) water binding capacity, fat absorption and dough conditioning properties make pea fiber great for granola bars, pasta and many baked products.

PULSES

*For more information, contact:* **USA Dry Pea and Lentil Council/ American Pulse Association**
**info@usapulses.com | 208-882-3023 | *www.usapulses.com***