

**A Dozen(*ish*)  
Reasons why  
Eggs are Vital  
to your  
Formulations**



AMERICAN EGG BOARD

We know you might be examining your ingredient choices and considering various options. However, there is simply no replacement for *real* eggs. Transparency in labeling and the use of *real* products are both equally as important as the functional benefits you're hoping to find in your ingredient selection. Here's why sticking with *real* eggs makes all the difference.

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## Eggs ensure your formulation is successful

*Real* eggs supply more than twenty functional properties in formulation, including binding, aeration, emulsification and coagulation, to name a few. No single ingredient can replace the multiple functions provided by *real* eggs. With today's market emphasis on clean label statements, companies generally try to avoid lengthy ingredient statements or increased costs incurred by the extra ingredients needed to maintain product quality and integrity.

Egg ingredients provide proven, high-quality taste, texture and appearance. Studies show that *real* egg ingredients in bakery items—like angel food cake and bread, for example—produce a desirable crumb structure, more uniform air micelles (bubbles) and more uniform air bubble distribution to help achieve your target range for specific gravity—among other product attributes. In addition, *real* eggs supply a neutral to pleasant taste and pleasing color. *Real* eggs supply results for formulators for product quality, taste, appearance and, ultimately, widespread consumer acceptance.

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## The functional properties of *real* eggs cannot be replaced

First of all, an ingredient should react synergistically with other ingredients within a formulation to provide proper function and taste. *Real* egg ingredients offer a neutral taste that blends well with other ingredients or flavor systems, without resorting to any masking agents. In addition, egg ingredients supply more than 20 different functional properties to processed foods, with the number and type of functional benefits differing depending upon the application. The list is extensive and includes:

- Adhesion
- Aeration
- Antimicrobial
- Browning/Color
- Clarification
- Coagulation/Thickening
- Coating/Gloss
- Humectancy/Insulation/Moisturizing
- Crystallization Control
- Edible Packaging Film
- Emulsification
- Flavor
- Fortification/Protein Enrichment
- Mouthfeel
- pH
- Richness
- Shelf Life Extension
- Structure
- Tenderization/Texture
- Whipping Ability

It would be difficult to replace the multi-functional properties egg ingredients provide with a single ingredient. Any such process might involve multiple ingredients that each supply a single functional property, potentially resulting in an aftertaste to the finished food product, lengthen the ingredient statement and possibly add costs.

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## Real eggs are versatile

We can't emphasize enough the fact that one single ingredient—the egg—supplies more than 20 different functional benefits to food formulators. Replacing these multiple functions with a single ingredient is not a likely possibility, especially when scaled up. *Real* eggs are simple to order, store and use when processors follow good manufacturing practices. Egg replacers are more complex, because they can cause reformulation issues and/or require machining and processing differences. In addition, alternative ingredients may require lengthy transport times or lengthen product ingredient statements.

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## Consumers value *real* ingredients, especially eggs

Clean labels are more than a passing trend; emphasis on shortened ingredient statements grows with each passing year. Part of this is due to changing demographics, with Millennials overtaking Baby Boomers as the dominant purchasing force in the marketplace. Their values and purchasing habits dovetail with the clean label philosophy.

A few standard rules apply to clean label perception, with market research showing consumers prefer labels that are short. They also prefer ingredients similar to those they might find in a kitchen cupboard, with names that are easy to pronounce, and don't sound like chemicals. Egg ingredients, available as dried, liquid or frozen, can generally be listed as "eggs" on the label. Most consumers—94% of them, to be exact—have shell eggs in the refrigerator at home.

Due to the fact that egg ingredients can supply upwards of 20 different functional properties within formulation, eggs can help on the road to creating a clean label product. Reformulations and replacements can lengthen the label. Due to the multiple functional properties supplied by egg ingredients, any replacement would more than likely require multiple added ingredients. With some claiming the gold standard for a clean label includes five ingredients or less, this would become difficult or near impossible to achieve. And the longer the ingredient list, the more likely consumers are to encounter an ingredient they don't like for one reason or another.

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## Real eggs ensure a clean label

In certain cases *real* eggs provide great benefit to label declarations or product identity. The Code of Federal Regulations (CFR) contains 300 identity standards for 20 different food categories. Certain ingredients are required while others are prohibited, in order to retain product identity; some of these identities require *real* eggs. By changing or adding ingredients, formulators risk changing more than just the label length; the product's very identity might be challenged.

In addition, a new group of consumers is emerging as a market force—Gen Z.

Buying patterns are changing and while this demographic group craves flavor adventures, they also seek authenticity and transparency in labeling. Changing the label declaration or adding ingredients runs the risk of changing the consumer's perception of the food or beverage.

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### Replacing *real* eggs is costly in the long-run

There is no single, one-to-one substitution that can replace the multiple functional and synergistic properties supplied by egg ingredients. So even if the main egg substitute claims to cost less, more than likely you'll need additional ingredients. With each added ingredient, the expenses add up.

There are costs associated with new packaging and labeling changes. Transportation and shipping is a factor. If you're lucky, you will be able to source all of the substitute ingredients from one location, but this might not always be possible.

America's egg farmers supply domestic egg ingredients, so shipping is generally localized. Substitute ingredients, such as certain gums, might come from overseas. This can cause an added expense in addition to potential shipping delays. And we haven't yet accounted for warehousing, and, perhaps, additional paperwork.

Extra ingredients add to the number of SKUs stored in your warehouse. The list of costs can continue growing, depending on the number and type of extra ingredients.

## 7

### *Real* eggs are a local ingredient

Domestic sourcing could play an important role in a product's perception. First, there is the issue of sustainability. The egg industry published a report announcing the improvement in its environmental footprint and successful efforts to improve sustainability over the past 50 years. These types of reports can be tricky to obtain from overseas producers or manufacturers who operate under different regulations than domestic firms or farms.

In addition, domestic ingredients don't have to be shipped from overseas—this can be a sustainability issue for some consumers. And domestic ingredients from American farmers help support our country's economic interests. *Real* eggs supplied by American farmers definitely meet your need for domestically sourced ingredients

## 8

### *Real* eggs are natural and recognizable

Research studies show consumers prefer the most simple, basic ingredients from a source considered natural. In addition, this same research identified that consumers prefer ingredients they can pronounce easily and those they are most likely to find in their own kitchen. The word "eggs" might not take up a lot of space on the label, but it speaks volumes about quality and comfort to the consumer.

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### *Real* eggs are a high-quality protein source

When looking for the perfect protein source, there's no need to look any further than real eggs. Eggs are one of nature's most perfect proteins. Eggs provide high-quality protein that is often used as a standard for comparing other proteins; moreover, they're an all-around nutritional powerhouse that contribute to health and well-being at every age and life stage, and in any diet. Eggs are a naturally nutrient-rich and contain eight essential nutrients.

One large egg provides an excellent source of vitamin B12, biotin (B7), iodine, selenium, and choline; a good source of high-quality protein, riboflavin (B2) and pantothenic acid (B5); as well as the carotenoids lutein and zeaxanthin (252 mcg), all for only 70 calories. Importantly, nearly half of an egg's protein and most of its vitamins and minerals are found in the yolk.

Eggs are recommended as a fundamental first food for children by the Dietary Guidelines for Americans because they provide several key nutrients important during the time their brains are most rapidly developing. The nutrients in eggs also support healthy aging, as high-quality protein supports maintenance of healthy muscle with aging and lutein and zeaxanthin intake supports eye health and cognitive function.

Heart-healthy eating can include eggs, as supported by an abundance of research including a recent Harvard study evaluating more than 20 years of data. Eggs are also recommended for healthy adults as part of a heart-healthy diet according to the American Heart Association.



## **Efficacy of *real* eggs in product formulation has been repeatedly studied**

Scientists have been studying the egg almost as long as eggs have been a part of the food system—when humans discovered how useful and delicious they truly are. There are hundreds, if not thousands of journal articles and reports on egg nutrition and functionality. This is in addition to practical hours logged year after year at bakeries and processing facilities that rely on eggs as a vital ingredient to help create successful food products. We do believe we've only begun to scratch the surface of all of the benefits eggs can provide.

What's more, a single ingredient like the egg will produce more consistent research results. Since there is no single (one-to-one) replacement for eggs in formulation, a combination of different ingredients often are blended together to try to replicate egg functionality. This diverse body of ingredients means research results are difficult to standardize and will vary from one application to another.



## ***Real* eggs fit into your standards of identity easily**

Consumers expect their products to taste the same from one purchase—or one bite—to the next. Part of this is due to the fact the United States Code of Federal Regulations (CFR) lists standards of identity or defines various food products and lists specific ingredient requirements. This helps standardize our food supply.

In total, FDA details 300 identity standards in 20 categories of food, specifying minimum and maximum requirements and optional as well as prohibited ingredients for products—ranging from macaroni to frozen custard. If it doesn't meet federal standards, the product must be called by another name. *Real* eggs help keep things simple, and in many cases, help maintain a standard of identity.

## 12 *Real eggs are scalable*

An R&D team might create amazing concepts in the lab, but the true test of any ingredient is its ability to perform consistently in a large-scale manufacturing environment. *Real* eggs have an impressive track record that spans decades, proving optimal performance under the rigors of modern processing conditions. Whether liquid, frozen or dried, egg ingredients are available in the quantities and forms manufacturers need for scaled-up operations. These egg ingredients coagulate, form foams, emulsify and contribute 20-plus functional properties essential to different applications.

## 13 *Real eggs are safe*

In a word, the safety record for further processed eggs is great. The Egg Products Inspection Act passed by Congress in 1970 requires all egg products distributed for consumption be pasteurized to destroy Salmonella. Further processed and packaged egg products sold in the United States are pasteurized according to strict standards to ensure their safety. Although there have been rare instances of a product recall, there have been no recorded outbreaks of salmonellosis linked to pasteurized egg products since pasteurization was instituted for further processed egg products.

## 14 *Real eggs means fewer ingredients, overall*

*Real* eggs supply multiple functional properties to formulators and taking advantage of these benefits can help create shorter labels. The industry as a whole continues to move towards cleaner, simpler, more transparent label statements, which means real ingredients from natural sources are of great benefit. *Real* eggs perform complex functional tasks within a wide range of processing parameters while remaining as simple as it gets when it comes to ingredient statements, commonly listed as “eggs” on the label.

## 15 *Real eggs bring both utility and identity*

The best, well-rounded approach is to find ingredients that supply utility and identity. Anytime you can find an ingredient that provides not just one, but multiple functional benefits, and looks good on your label, it's a smart move to investigate it further. And *real* eggs supply more than 20 different functional benefits - it's a utilitarian workhorse in food processing environments. Not to mention the fact that every consumer can see the word “eggs” on a product label and instantly recognize it as a familiar ingredient.



Home of the Incredible Egg, the American Egg Board is the U.S. egg industry's national commodity marketing organization. The AEB's mission is to increase demand for eggs and egg products through research, education and promotion. The AEB is located in Chicago, Illinois.

*For more information, visit [IncredibleEgg.org](http://IncredibleEgg.org).*