



# california almonds

Since ancient times, almonds have been prized throughout the world for their delicious taste, crunchy texture, and increasingly, for their nutritional value.

California is the world's largest producer of almonds. With its ideal growing conditions, including a mild climate, rich soil, and abundant sunshine, this area produces about 80% of the global almond supply, exporting to nearly 90 countries. To ensure a consistent, high-quality, wholesome product year-round, state-of-the-art equipment and specialized techniques for growing, harvesting, processing, and packaging are used.

The California Almond industry respects the environment and keeps consumer health in mind, with food safety and quality assurance programs in the orchard and in processing and packaging.

California Almonds are highly versatile and available in numerous varieties and forms suitable for diverse product applications. Use this guide to help determine the most suitable variety, size, form, and grade of almond for your needs.

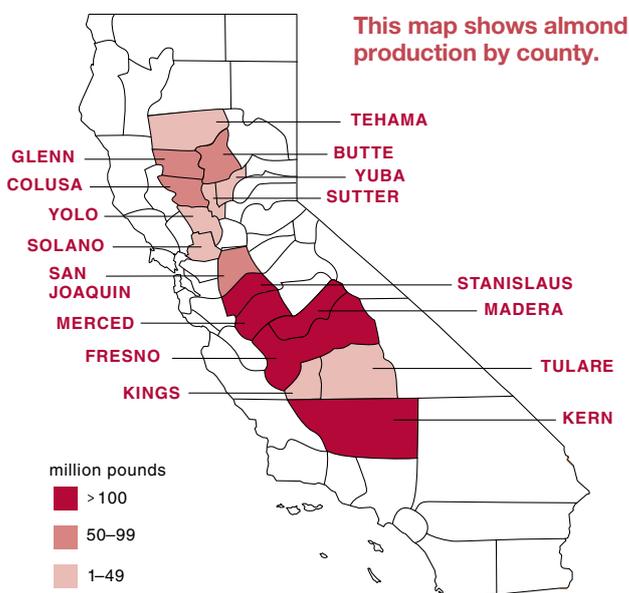
## OVERVIEW OF THE CALIFORNIA ALMOND INDUSTRY

Six thousand growers carefully tend more than 700,000 acres (283,000 hectares) of almond orchards throughout central California, a region noted for its ideal growing climate. Hot, dry summers and cool, rainy winters help provide a steady supply of wholesome California Almonds. California is the only place in the United States where almonds are commercially grown.

## THE ALMOND BOARD OF CALIFORNIA

The Almond Board of California was established in 1950 by the US Congress to administer a grower-enacted Federal Marketing Order under the supervision of the US Department of Agriculture. The Almond Board's mission is to create a rewarding environment for the production, processing, and marketing of California Almonds. Efforts focus on expanding domestic and international distribution, consumption, and usage of almonds by funding a variety of generic activities that benefit the industry as a whole. The Almond Board is funded by an annual assessment on the marketable kernel pound weight of almonds.

Program activities include such critical functions as domestic and international marketing; nutrition, production, and environmental research; food quality and safety initiatives; monitoring trade and market access issues; and analysis and dissemination of industry statistics. The Almond Board of California does not establish commodity prices.



# almond seasons

Like nectarines, peaches, and plums, the almond is categorized botanically as a fruit. Almonds are classified as either sweet (*Amygdalus communis L. var. dulcis*) or bitter (*Amygdalus communis L. Var. amara*), but only sweet are grown in California.

Almonds grow on trees that bloom from mid-February through March. These trees are not self-pollinating, so bees have an important role. For the trees to produce, at least two different almond varieties must be planted in alternating rows.

Almonds develop in a shell that is surrounded by a hull (analogous to the fleshy part of a peach). Over the summer, as the nuts mature, the hull dries and splits open, revealing a shell that encases the nut. The nuts dry naturally in this shell before they are harvested.

Between mid-August and October, almonds are harvested by mechanical tree “shakers,” which knock the almonds, still in their hulls, to the ground. The nuts are then gathered and delivered for processing, where the next stage of cleaning and grading occurs. Finally, they’re sold to thousands of customers like you.



## almond lifecycle





# standards and grades

USDA grades for natural almonds are voluntary minimum standards. The California Almond industry can supply almonds to customers' unique specifications, both in terms of sizes and grades, based on the intended applications.

## USDA GRADES

USDA Grades (Effective 3/24/97)	Whole Kernels	Minimum Diameter (in in.)	Dissimilar	Doubles	Chip & Scratch	Foreign Material	Particles & Dust	Split & Broken	Other Defects	Serious Defects	Undersize
US Fancy	—	—	5%	3%	5%	.05%	.1%	1%	2%	1%	—
US Extra No. 1	—	—	5%	5%	5%	.05%	.1%	1%	4%	1.5%	—
US No. 1 (Supreme)*	—	—	5%	15%	10%	.05%	.1%	1%	5%	1.5%	—
US Select Sheller Run	—	—	5%	15%	20%	.1%	.1%	5%	3%	2%	—
US Standard Sheller Run	—	—	5%	25%	35%	.2%	.1%	15%	3%	2%	—
US No. 1 Whole & Broken	30%	20/64 UOS†	5%	35%	x	.2%	.1%	x	5%	3%	5%
US No. 1 Pieces	x	8/64	x	x	x	.2%	1%	x	5%	3%	5%

\* US No. 1 is commonly referred to by industry as Supreme. However, Supreme is not a USDA grade.

† UOS = Unless Otherwise Specified

- X No limit established.
- Also included in "Other Defects."
- Includes max. 2% under 20/64 inch.
- Includes max. 5% under 20/64 inch.  
% also included in "Chip & Scratch."

1 US ton = .907 metric ton  
 1 metric ton = 2,204.6 pounds  
 1 pound = 453.6 grams  
 10 oz. = 283.5 grams

### Sample Sizes (pounds)

Lot Size	10,000	10,000–44,000	>44,000
Grams Drawn	2,000	4,000	6,000
Grams Analyzed	1,000	2,000	3,000

## CALCULATION OF GRADING PERCENTAGES *[Example]*

$$\% \text{ [Dissimilar Kernels]} = \frac{\text{Weight of [Dissimilar Kernels]} (g) \times 100}{\text{Weight of Total Sample} (g)}$$

For additional information on USDA grades and standards, see the USDA website: [www.ams.usda.gov/standards/almonds.pdf](http://www.ams.usda.gov/standards/almonds.pdf)

## UNDERSTANDING USDA GRADES

More rigorous specifications are typically negotiable in order to meet a customer's application requirements.

### US FANCY

The highest grade—typically appropriate for products where the visual appeal of the almond is critical to the application. This grade is not widely used.

### US EXTRA NO. 1

Similar to US Fancy—ideal for food applications where the appearance of the almond is very important.

### US NO. 1 (SUPREME)

Typically used for whole almond applications or for further processing such as blanching and roasting.

### US SELECT SHELLER RUN

Mid-quality grade—good choice for applications where the almonds with minimal sorting/processing can be incorporated with other ingredients; for example, inside a confectionery product and the higher level of chipped and scratched kernels is accepted. Also appropriate for further processing such as blanching, grinding, roasting, dicing, and slicing.

### US STANDARD SHELLER RUN

Good grade for further processing such as blanching, dicing, grinding, or paste, particularly where a higher level of split and broken kernels is not a concern.

## USDA GRADING PARAMETERS

### DISSIMILAR

Typically used for whole almond applications or for further processing such as blanching and roasting.



### DOUBLES

Two kernels developing in one shell. One side of a double kernel is flat or concave.



### CHIP & SCRATCH

Loss of kernel skin as a result of mechanical processing. Greater than 1/8" (3.2mm) in diameter, it is defined as injury; if affecting, in aggregate, greater than 1/4" (6.4mm) in diameter, it is defined as defect.



### FOREIGN MATERIAL

Pieces of shell, hulls, or other foreign matter that will not pass through a round-opening screen measuring 8/64" (3.2mm) in diameter.



### PARTICLES & DUST

Fragments of almond kernels or other material that will pass through a round-opening screen measuring 8/64" (3.2mm) in diameter.



### SPLIT & BROKEN

Seven-eighths or less of complete whole kernels that will not pass through a round-opening screen measuring 8/64" (3.2mm) in diameter.



### OTHER DEFECTS

Any defect that materially detracts from the appearance of the individual kernel or the edible or shipping quality of the almonds. The defects include gum, shrivel, brown spot, discolored, and chipped and scratched kernels greater than 1/4" (6.4mm) in diameter.



### SERIOUS DEFECTS

Any defect that makes a kernel or piece of kernel unsuitable (includes decay, rancidity, insect injury, and damage by mold).





# california almond handling tips

California Almonds have natural antioxidants that promote a long shelf life when properly handled. The most important aspect to preserving the incredible quality of California Almonds is maintaining controlled conditions. Elevated temperatures and moisture can significantly reduce quality and shelf life. For that reason, almonds are normally held in bins, silos, or other bulk containers that are stored in cool, dry conditions.

Processing can also affect the shelf life of almonds. In general, cutting (dicing, slivering, slicing, grinding) and blanching increases the exposed surface area and begins the oxidative process, which can reduce shelf life.

Because both oil and dry roasting subject almonds to higher temperatures, roasted products must be protected from oxygen. In addition, it is good practice to avoid exposure to direct sunlight, which can darken the surface of the nut.

## RECOMMENDATIONS FOR STORAGE

- Store under cool and dry conditions (<10°C/50°F and <65% relative humidity)
- Almond moisture should be maintained at 6% or less
- Avoid exposure to strong odors as almonds can absorb odors of other materials if exposed for prolonged periods
- Protect from insects and pests
- Roasted products must be protected from oxygen. Nitrogen flushing and/or vacuum packaging are two options
- If kept under cold storage conditions (<5°C/41°F and <65% relative humidity), whole natural almonds can be stored for about two years with no significant loss in quality
- Rotate stock to optimize shelf life

## COMMON PACKAGING FOR CONTAINER SHIPMENT

PRODUCT	VOLUME	CONTAINER
NATURAL ALMONDS	25 lbs (11.3 kg) 50 lbs (22.7 kg)	Cartons
	2,200 lbs (1 mt)	Fiber bulk bin
CUT ALMONDS	25 lbs (11.3 kg)	Cartons with plastic liner
	1,000 lbs (454 kg) 1,500 lbs (681 kg)	Fiber bulk bin with plastic liner
ROASTED ALMONDS	25 lbs (11.3 kg)	Cartons with vacuum-packed foil bags
IN-SHELL ALMONDS	50 lbs (22.7 kg)	Sacks



# quality assurance + food safety programs

Ensuring the wholesomeness of California Almonds begins in the orchard and is carried through to the manufacturer. California Almonds are produced with consideration for quality control and food safety standards. Careful practices have been instituted by the California Almond industry's growers and processors. The Almond Board of California works closely with university specialists and has consulted with state and federal regulators to develop almond-specific good agricultural practices for almond growers and good manufacturing practices for processors. These documents are constantly evaluated and updated.

Almond industry quality assurance and food safety programs are central to maintaining the industry's reputation. Programs are proactively reassessed when new research or agricultural conditions suggest that practices could be further improved. Constant vigilance, from orchard to shipping container, is undertaken to reach the ultimate objective: providing customers and consumers around the world with the highest level of confidence in California Almonds.

## QUALITY ASSURANCE

The California Almond industry has developed and endorses the following quality assurance programs:

- Good Agricultural Practices (GAPs), which provide guidelines to growers on how to minimize potential hazards, such as pathogens, contaminants, and pest management materials during production and harvest
- Sanitation Standard Operating Procedures (SSOPs), which ensure a clean and sanitary environment in the processing facility
- Good Manufacturing Practices (GMPs), which define procedures to be used by handlers to process, pack, store, and distribute almonds under sanitary conditions
- Hazard Analysis Critical Control Point (HACCP), which provides a systematic approach to identify, assess, and control the risk of biological, chemical, and physical hazards
- Environmental Monitoring/Post Process Contamination Control, which targets control of microorganisms in the processing environment with an emphasis on the prevention of post-process recontamination

Together, these programs provide a complete food quality and safety program.

## CHEMICAL + MICROBIOLOGICAL PARAMETERS

The Almond Board of California does not have recommendations on chemical and microbiological standards for raw almonds. These types of standards are normally defined between the supplier and the buyer. Following are parameters commonly quoted in the industry:

CHEMICAL:	
Moisture	3.5–6%
Free Fatty Acids	1.5%
Peroxide Value	5 meq/kg
MICROBIOLOGICAL:	
Aerobic Plate Count	<50,000 cfu/g
Coliforms	<1,000 cfu/g
E. coli	<10 cfu/g or <3MPN/g
Yeast and Molds	< 5000 cfu/g
Salmonella	Negative/25g or /375g
Staphylococcus	Negative/g
Streptococcus	<100 cfu/g





# varieties

There are approximately 30 almond varieties produced in California orchards. Ten varieties represent over 70% of production. Varieties are grouped into broad classifications for marketing purposes based on distinguishing characteristics such as size, shape, and “blanchability.” The majority of almond production in California falls into the following three major classifications: Nonpareil, California, and Mission. Some varieties may fall under more than one classification because they have characteristics of one type (such as Mission) but are also blanchable (a characteristic of the California classification). All California Almonds are developed using traditional methods; genetically modified almond varieties are not planted or available in California.

When purchasing California Almonds, it is possible to order either by classification type or by specific variety, depending on what best suits the ultimate usage. Working with your supplier, it is important to understand whether your needs will be best served by ordering a specific variety or a classification type, ensuring the almonds you receive are appropriate for your product line. For example, ordering California type without further information could result in delivery of various almond varieties that also fall under the Mission type, such as the Butte, Padre, or Fritz, which may be a different shape than you need for your application.

## NONPAREIL

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Nonpareil has the widest range of uses among the marketing classifications. Nonpareil are easily blanched (skin is removed) and cut for processed forms. A thin outer shell and smooth kernel allow for easy, blemish-free processing. As a result, Nonpareil almonds are used anywhere an attractive appearance or a strong almond identification is important.

## CALIFORNIA

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This classification includes varieties that are generally blanchable and used primarily in manufactured products. California type almonds have a wide range of shell hardness, kernel shapes, skin color, and surface characteristics. As a result, they are quite adaptable and well suited for nearly any process or application.

## MISSION

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Mission type almonds have a rich flavor, and their kernels are small, wide, and often plump. The kernel skin is generally darker than Nonpareil and wrinkled, which enhances salt and flavor adherence. Blanching is not as common for this type, but some varieties in this classification are blanchable.

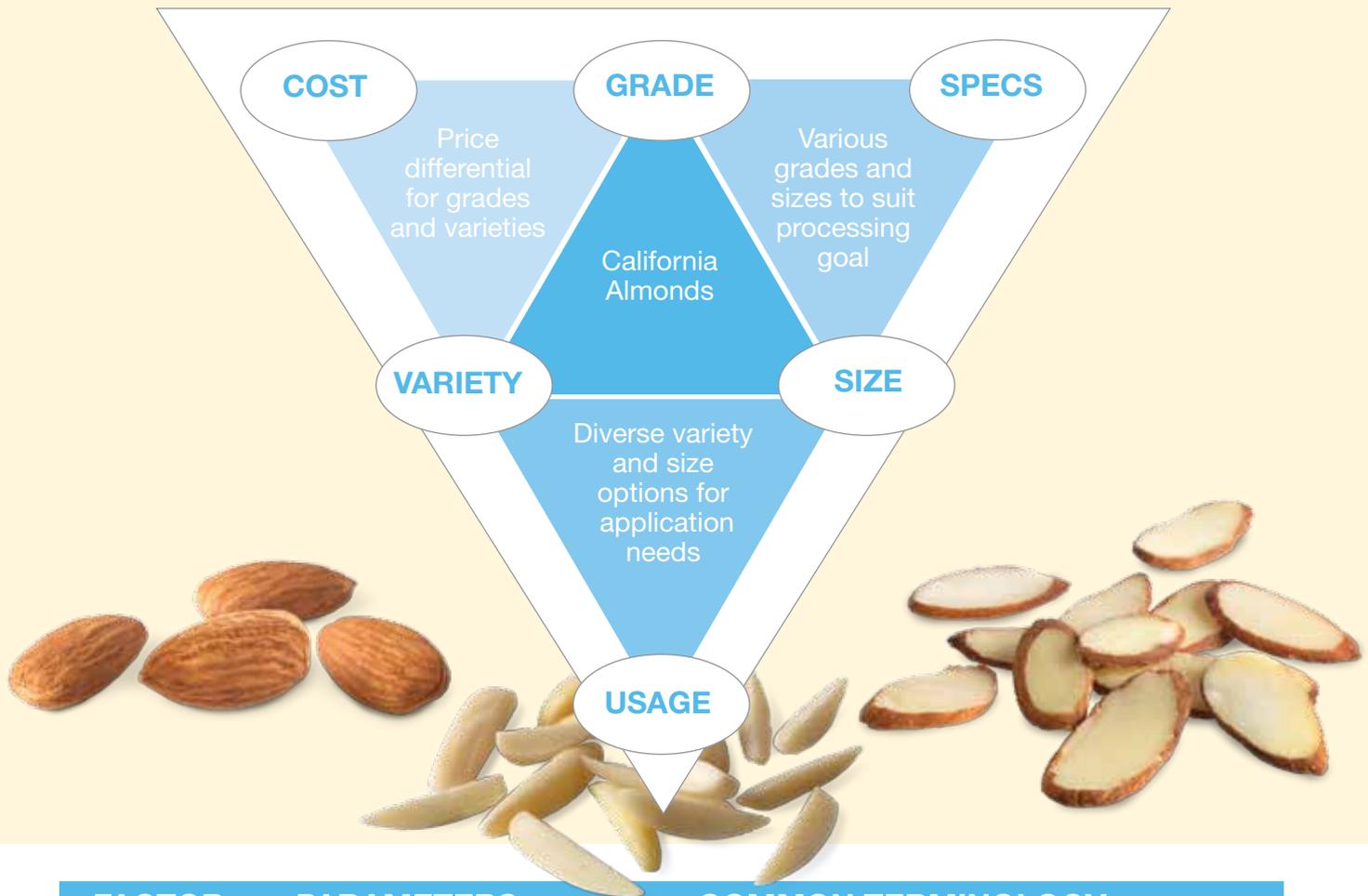


# MAJOR CALIFORNIA ALMOND VARIETIES

variety	CHARACTERISTICS		CLASSIFICATION			
	LONG & FLAT	SHORT & PLUMP/ROUND	CALIFORNIA TYPE	MISSION TYPE	NONPAREIL	IN-SHELL HARD SHELL
<b>NONPAREIL (NP)</b> 	<b>SHELL</b> Soft shell, light color, high suture opening  <b>NUT</b> Medium, flat shape, smooth surface	●			●	
<b>CARMEL (CR)</b> 	<b>SHELL</b> Soft shell, good shell integrity, fair suture opening  <b>NUT</b> Medium, narrow shape, slightly wrinkled surface	●	●			
<b>BUTTE (BT)</b> 	<b>SHELL</b> Semi-hard shell, light color, smooth surface, low suture opening  <b>NUT</b> Small, short plump shape, wrinkled surface		●	●	●	
<b>PADRE (PD)</b> 	<b>SHELL</b> Hard shell, good shell integrity, no suture opening  <b>NUT</b> Small, short wide shape, wrinkled surface		●	●	●	
<b>MISSION (MI)</b> 	<b>SHELL</b> Hard shell, good shell integrity, no suture opening  <b>NUT</b> Small, short wide shape, dark brown, deeply wrinkled surface		●	●		

			CHARACTERISTICS		CLASSIFICATION				
			LONG & FLAT	SHORT & PLUMP/ROUND	CALIFORNIA TYPE	MISSION TYPE	NONPAREIL	IN-SHELL HARD SHELL	
<b>MONTEREY (MT)</b> 			<b>SHELL</b> Hard shell, smooth surface, low suture opening  <b>NUT</b> Large, long narrow shape, deeply wrinkled surface	●		●			
<b>SONORA (SN)</b> 			<b>SHELL</b> Soft shell, dark brown color, rough surface, high suture opening  <b>NUT</b> Large, long narrow shape, light color, smooth surface	●		●			
<b>FRITZ (FR)</b> 			<b>SHELL</b> Semi-hard shell, good shell integrity, low suture opening  <b>NUT</b> Small, medium plump shape, fairly wrinkled surface		●	●	●		
<b>PRICE (PR)</b> 			<b>SHELL</b> Soft shell, dark brown color, rough surface, high suture opening  <b>NUT</b> Small, short narrow shape, fairly wrinkled surface	●		●			
<b>PEERLESS (PL)</b> 			<b>SHELL</b> Hard shell, good shell integrity, smooth surface, no suture opening  <b>NUT</b> Medium, wide shape, fairly wrinkled surface	●		●			●

# almond purchasing considerations



FACTOR	PARAMETERS	COMMON TERMINOLOGY
<b>VARIETY</b>	Shape, color, skin texture or smoothness, blanchability	Nonpareil, Carmel, Butte, Padre, Mission, Monterey, Sonora, Fritz, Peerless, Price
<b>SIZE*</b>	Count range of whole almond kernels per ounce (28.35 grams)	18/20, 20/22, 23/25, 25/27, 27/30, 30/32, 32/34, 34/36, 36/40, or customer-specified range
<b>GRADE</b>	Dissimilar, doubles, chipped and scratched kernels, foreign material, split and broken kernels, other defects and serious damage	Fancy, Extra No. 1, No. 1 (Supreme), Select Sheller Run, Standard Shell Run, No. 1 Whole and Broken, No. 1 Pieces
<b>IN-SHELL</b>	Shell hardness, shell integrity, suture opening, kernel quality, crack out	Market specific, depending on how in-shell will be ultimately sold to consumers, for example: <b>Traditional:</b> sold in the shell—semi- or hard shell acceptable, cracked with a mechanical nut cracker <b>Snack:</b> sold in the shell—soft shell with greater suture opening to allow seasonings to permeate the shell <b>Hand Crack:</b> sold as kernels—soft shell preferred to allow manual cracking

\*Individual whole kernel size may vary from year to year as a result of variations in weather, growing conditions, and production yields; therefore, availability of specific sizes may be limited in some years.



# forms

California Almonds are an exceptionally versatile, value-adding ingredient. Available in more forms than any other nut, almonds are easy to work with from a formulation perspective. California Almonds also complement a wide array of food flavors and applications, including confectionery, bakery, dairy, prepared foods, and snacks. Because they are available in whole, sliced, slivered, chopped, diced, or ground forms, with either the skin still on (natural) or removed (blanched), the application opportunities are unlimited. The selection of a particular almond form can vary the appearance, texture, flavor, and application potential of the finished product.

## **FLAVOR / TASTE**

California Almonds blend well with other ingredients. Their subtle flavor is strong enough to provide a buttery, nutty taste, yet light enough to lend gourmet richness without overpowering. Blanched almonds provide a slightly milder taste than natural almonds, while roasted almonds have greater flavor intensity.

## **TEXTURE / CRUNCH**

California Almonds have a hearty, crunchy texture that is retained across a wide range of applications. Entrées, sweets, fruits, and creamy dairy products all benefit from the added satisfying crunch of almonds. Some almond forms can also be used to thicken sauces or as a coating for meat and seafood.

## **AESTHETIC APPEAL**

Whether sprinkled as a topping or delicately positioned as a decorative garnish, almonds provide an attractive color contrast with other ingredients. Natural almonds and darker roasted almonds create a beautiful color accent against lighter backgrounds. Blanched almonds contrast wonderfully against colorful foods like chocolates, fruits, and vegetables.

## **CONSUMER POPULARITY**

California Almonds have broad consumer popularity around the world. Foods that contain almonds, like chocolate and baked goods, are perceived as more upscale in addition to being delicious. Adding almonds also enhances the nutritional profile of foods, offering marketing advantages for today's increasingly health-conscious consumers.



# MAJOR CALIFORNIA ALMOND FORMS

## whole, natural or blanched

### COMMON SPECIFICATIONS

USDA grades for natural almonds; processor or customer specifications for blanched almonds

### TYPICAL APPLICATIONS

Natural, roasted, or flavored snacks  
Embedded or enrobed in chocolate  
Ingredients for confectionery, energy bars, bakery  
Inputs for processing



## sliced, natural or blanched

### COMMON SPECIFICATIONS

#### THICKNESS

Thick: 1.5–1.8 mm Thin: 0.7–1.0 mm  
Regular: 1.1–1.4 mm Extra Thin: 0.5–0.7 mm

### TYPICAL APPLICATIONS

Topping for salads  
Ingredient for cereal  
Coating for savory dishes  
Garnishing for baked goods, desserts



## slivered, blanched

### COMMON SPECIFICATIONS

#### THICKNESS

Regular: 4.0–6.0 mm Halves: Split cut  
Medium: 3.0–5.0 mm

### TYPICAL APPLICATIONS

Roasted or flavored snacks  
Ingredient for baked goods, cereal  
Texture for confectionery  
Topping for prepared foods, salads



## diced, natural or blanched

### COMMON SPECIFICATIONS

Large: 28/18 .....28/64" & 18/64" (11.1 & 7.1 mm)

Medium: 22/8 .....22/64" & 8/64" (8.7 & 3.2 mm)

Small: 12/8 .....12/64" & 8/64" (4.8 & 3.2 mm)

Fine: 8/0 .....8/64" (3.2 mm)



### TYPICAL APPLICATIONS

Topping for dairy items, baked goods

Coating for ice cream bars

Filling for bakery or confectionery

Crust for meats, seafood

## meal or flour, natural or blanched

### COMMON SPECIFICATIONS

Coarse Ground

Fine Ground

(Grinders and screens determine particle size)

### TYPICAL APPLICATIONS

Sauce thickener

Ingredient and filling for confectionery

Flavor enhancer in bakery

Coating for fried foods



## paste + butter, natural or blanched

### TYPICAL APPLICATIONS

Alternative to other nut butters

Filling for chocolate, cereal bars, confectionery, bakery



## oil

### COMMON SPECIFICATIONS

Cold pressed, light and pale amber color

### TYPICAL APPLICATIONS

Cooking oil

Non-food

(e.g., cosmetics, moisturizer)

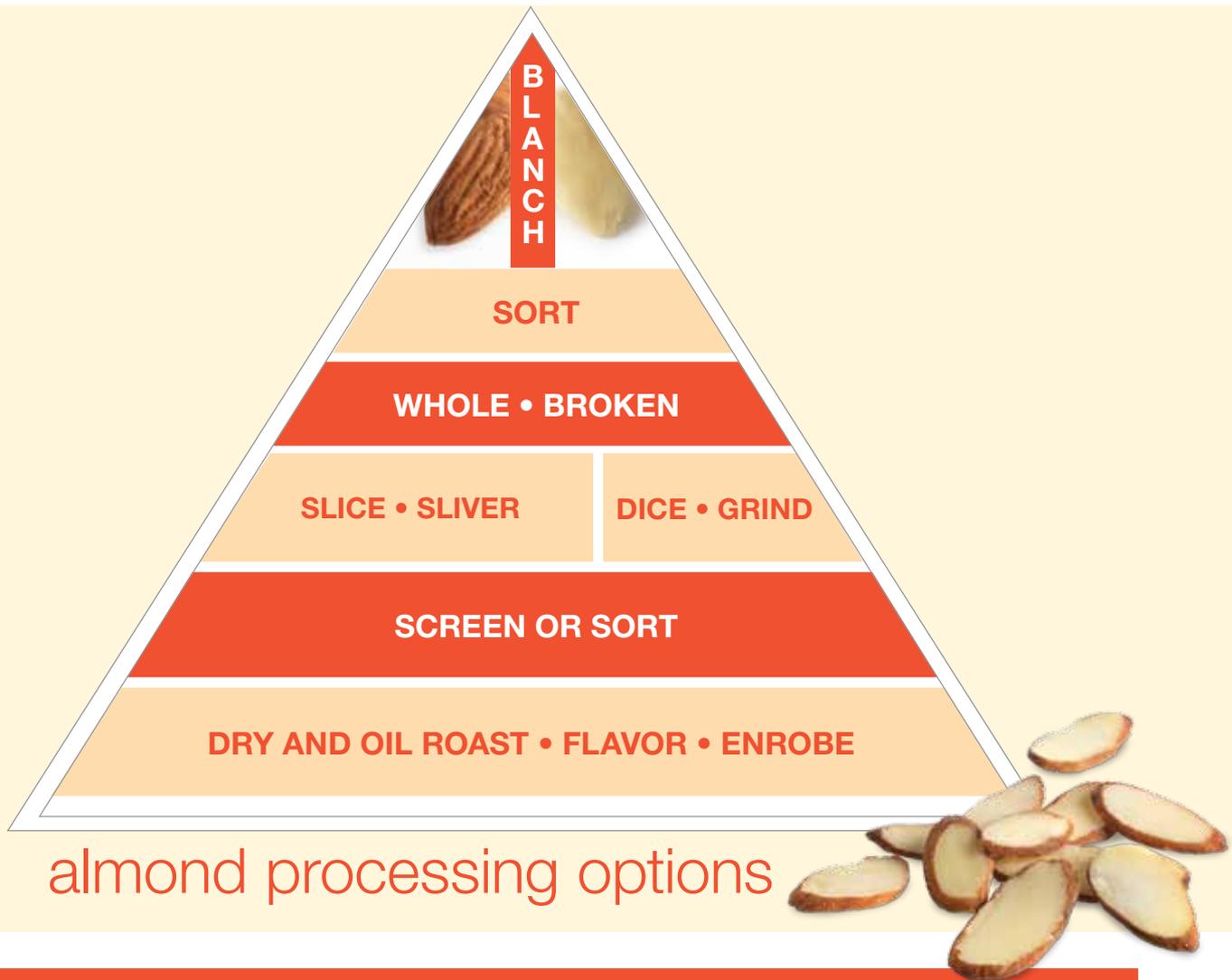


snacking



prepared foods





PROCESS	PRIMARY STEPS	GENERAL DESCRIPTIONS
<b>BLANCH</b>	Scalding, skin removal, drying, cooling, sorting	Almond skins are peeled off after the kernels are bathed in 85°C–100°C water for 2–5 minutes. Kernels are dried by hot air, and then cooled to ambient temperature.
<b>SLICE, SLIVER</b>	Plasticizing (heat to soften kernels), cutting, drying, cooling, screening	Almond kernels are made pliable by dry or steam heat prior to being cut by blades into different forms. The cut product is dried and cooled to ambient temperature and then screened.
<b>DICE, GRIND</b>	Cutting, screening	Almond kernels are diced or ground, then screened for particle sizes.
<b>ROAST</b>	Dry heat or oil roasting, cooling	Almond kernels are roasted by either hot air at a temperature of 65.5°C–100°C or oil at a temperature of 130°C–170°C for varying times depending on application needs.
<b>SORT, SCREEN</b>	Electronic or manual sorting; round-hole screens with different diameters	Defects and foreign material are removed prior to further processing. Screens in varying sizes are used throughout processing for uniformity and sizing of the product.



# crop protection

California Almond growers use a variety of methods to provide a safe, high-quality product to consumers and customers around the world. Used responsibly, pesticides are one of several tools that reduce potential damage by pests and other organisms. The almond industry has been a leader in the responsible use of pesticides, funding considerable research that has led to an industry-wide reduction in the use of pesticides and more emphasis on alternative integrated pest management (IPM) practices.

The California Almond industry has been honored twice for its IPM initiatives by the US Environmental Protection Agency (EPA) with the agency's Environmental Stewardship Program award. The Almond Board of California was also recognized for its extensive research projects placing emphasis on the importance of growers monitoring their orchards for pests and harmful organisms, using a variety of crop inputs and orchard management practices that ensure a healthy environment for their orchards.

## CALIFORNIA'S PESTICIDE REGULATION

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For crops grown in California, all pesticides used must also be registered by the California Department of Pesticide Regulation (DPR). The DPR provides strict oversight of product evaluation, product registration, environmental monitoring, residue testing, and local use enforcement.

Pesticide manufacturers who want to distribute their products in California must first submit results from tests and studies to the DPR for evaluation. DPR determines whether the chemicals can be safely used under the specific and sometimes unique growing conditions found in California. Since all US almond

production is in California, any compound used on almonds will have undergone this rigorous dual evaluation prior to approval.

While similar to the EPA, the DPR review occasionally requires additional specific data, for example, on worker exposure and environmental effects.

Once registered and approved for use, pesticides are subject to periodic reevaluation to determine if there have been any changes in the conditions of use or in risks.

## PESTICIDE APPROVAL

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Before pesticides can be marketed and used in the United States, the EPA evaluates them thoroughly to ensure that they meet federal safety standards to protect human health and the environment. The compounds that meet the requirements are granted a license, or "registration," that permits their sale and use according to specific directions and requirements stated on the product label.

During the rigorous registration process, registrants are required to submit results from more than 100 different scientific studies that demonstrate the safe use of the product. Maximum residue limits (MRLs) are established for each pesticide and for the crops on which they may be used.

The entire content of a pesticide label must be approved by the EPA before the pesticide can be sold or distributed in the United States. The label provides clear directions for effective use while minimizing exposure to workers and the environment. It is a violation of federal law to use a pesticide in a manner inconsistent with its labeling.

Pesticides are periodically re-reviewed by the EPA to ensure that older compounds meet current safety standards or in recognition of changes in usage patterns. This process ensures that registered pesticides continue to meet the safety standards required by current policy and law.

# licensing + monitoring add protection

To ensure the safe, environmentally sound, and effective use of pesticides in California, regulations require that (1) licensed professionals recommend and apply pesticides, or (2) growers and/or their employees who apply pesticides are properly trained and certified.

Since 1990, the California DPR instituted a program of “100% use reporting.” This means that all growers must report every pesticide application they make to the county in which they farm. The report must include the name of the product, the amount applied, the size of the treated area, and the date and location of the application.

The DPR compiles these pesticide use reports, and the results are available online at [www.cdpr.ca.gov](http://www.cdpr.ca.gov) under “databases,” then “pesticide use.” Application information is not available for individual farms. It usually takes DPR about 9 to 12 months to complete the review of the pesticide reports and make them publicly available.

## pesticide use enforcement

County agricultural commissioners’ offices provide both education and oversight of pesticide applications. The DPR oversees licensing and certification of dealers, pest control advisers, pest control businesses, and applicators. California regulators administer the nation’s largest state pesticide residue monitoring program among other enforcement duties.

Altogether, the use of pesticides by California growers is highly regulated and monitored to protect the health and welfare of growers, workers, the public, the environment, and the consumer.

### GLOBAL ACCESS

The Almond Board of California works closely with US regulators in monitoring MRLs in other countries. Through these efforts, the Almond Board identifies changes in foreign government pesticide regulations as well as where differences exist between US MRLs and MRLs of other countries. The Almond Board also identifies where relevant data should be provided to ensure more consistent results.

