

Chapter 16

Fruit and Fruit Products

How Baking Works

Words, Phrases, and Concepts

- Anthocyanins
- Polyphenolic compounds
- IQF
- 4 + 1 pack
- Sulphur dioxide, sulfites
- CA storage
- Phenolase
- Ethylene gas

Introduction

Fruit is:

- The centerpiece of many traditional desserts.
Examples: Pies, poached pears, apple strudel.
- A popular garnish for plated desserts.
- An important source of flavor, color, texture.
- A healthful ingredient.
 - Most fruits are good sources of dietary fiber.
 - Pigments in fruits, besides providing color, have health benefits.
 - Anthocyanins (polyphenolic compounds) are the red and purple pigments in fruits.
 - Carotenoids are in orange and yellow fruits.

How Fruit is Purchased

Fruit can be purchased:

- Fresh.
- Frozen.
- Canned.
- Dried.

It comes:

- Whole or sliced.
- Pureed or as paste.
- Packed in water or sugar.
- As jam, as prepared pie filling or bakery filling.

How Fruit is Purchased

Fresh fruit

- Most fruits are available year-round.
 - Exceptions: pomegranate and lychee, for example.
- Quality can vary depending on:
 - Storage conditons.
 - Time of year.
 - Growing region.
 - Climatic conditions.
 - Different varieties of same fruit.

How Fruit is Purchased

Frozen fruit

- Straight-pack (fruit only).
 - Freezes solid; whole container must be thawed before use.
- Individually Quick Frozen, IQF.
 - Fruit pieces remain separate; thaw only what is needed.
- Sugar-packed.
 - Sugar or syrup added.
 - Example: 4 + 1 strawberries.
 - Like straight-pack, freezes solid; whole container must be thawed.
 - Sugar protects color, flavor, texture of fruit.
- Purees.
 - Convenient for sauces, for garnishing plated desserts.
 - Come in a wide variety of flavors;
 - *Examples:* raspberry, mango.
 - Expensive, but saves labor.

How Fruit is Purchased

Canned fruits, fillings, jams

- Solid pack: fruit only.

Example: Pumpkin.

- Water pack.

- Syrup pack.

- Light, medium, heavy syrup.

- As with poached fruit, fruit packed in syrup will be firmer and more vibrant in color than fruit packed in water.

- Fruit pie and pastry fillings.

- Ready to use.

- Often contains additives to improve color and firmness and to prevent mold growth once opened.

How Fruit is Purchased

Dried fruit

- Drying is a form of preservation.
- Some fruits are dried naturally in sun.
 - Most dates, figs, plums, raisins.
- Some are tunnel-dried under controlled conditions.
 - Apples, apricots, blueberries, cherries, cranberries, golden raisins, papayas.
- Sulfur dioxide (or other form of sulfur) sometimes added to light-colored fruits, to prevent browning.
 - Apples, apricots, golden raisins, papayas, peaches, pears.
 - Often have characteristic sulfur taste.
- Sugar sometimes added to low-sugar fruits, to prevent toughening and to balance sourness.
 - Blueberries, cherries, cranberries, strawberries.

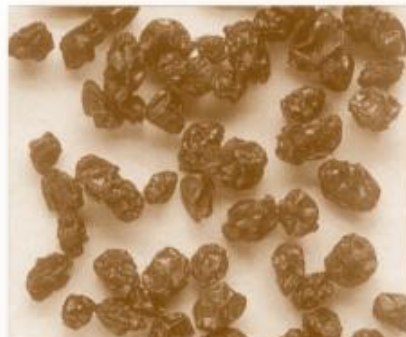
Common Dried Fruits

Raisins

- Most common dried fruit; also made into paste.
- Dried from Thompson Seedless grapes.
 - Also called sultana grape.
 - Natural or golden.
- Zante currant raisins.
 - Dried from small Black Corinth (“champagne”) grape.
 - About one-quarter the size of regular raisins.



(a)



(b)

(a) Select raisins (b) Zante currants

Common Dried Fruits

Sweetened dried fruit

- Blueberries, cherries, cranberries, strawberries.
- Sugar softens and sweetens fruits naturally low in sugar.
- Use in heavy doughs or in low-moisture products.
 - *Examples:* cookies and scones.
- Compared with fresh or frozen fruit:
 - Flavor and color not as fresh and bright.
 - More expensive.

Common Dried Fruits

Dried plum paste

- Also called prune paste.
- Generally dark brown in color, but lighter pastes available.
- Made by blending dried plums with water.
- High in sorbitol, a hygroscopic polyol.
- Used as a fat replacer.
 - Moistens, tenderizes, leavens.

Common Fruits

Apples

- Many varieties available.
- Most common in U.S.:
 - Red Delicious, Golden Delicious, Granny Smiths
- Newer varieties developed and popularized:
 - Fuji, Gala, Jonagold, Honeycrisp.
- Each variety has a characteristic color, flavor, texture.
- “Fresh” apples have sometimes been stored under Controlled Atmosphere (CA) conditions.
 - Kept at optimal temperature, humidity, oxygen conditions.
 - Some apples stored as long as six months in CA storage.
 - Apples lose sourness and aroma; become mealy; brown more quickly.

Common Fruits

Apples

- No one apple best for all uses.
- Apples for:
 - Pie or strudel: best if apple has apple aroma, crisp firmness, sufficient sourness. Often, combination of different apples works best.
 - Whole baking: best if apple holds shape. Rome Beauty does this best.
 - Fresh fruit: best if apple is more sweet than sour, is firm and crisp, does not easily brown. Cortland, Golden Delicious, Cameo, Fuji.

Common Fruits

Browning of apples

- Apples and certain other fruits brown within minutes of being cut, or when frozen and thawed.
- Caused by the enzyme phenolase.
 - Phenolase causes polyphenolic compounds to form very large molecules that are brown.
- To prevent:
 - Heat fruit, to inactivate enzyme.
 - Add lemon juice or another acid, to lower pH.
 - Cover fruit in liquid, or coat with syrup or glaze.
 - Select fruit variety that browns slowly or not at all.

Example: pears poached in sugar syrup with added lemon juice.

Common Fruits

Blueberries

- Sometimes called bilberries, rabbiteyes, huckleberries.
- Two main types: wild and cultivated.
- Cultivated blueberries; grow on shrubs.
 - Also called high-bush blueberries.
 - Larger in size; provide juiciness when bitten into.
- Wild blueberries; grows on low vines.
 - Also called low-bush blueberries.
 - Commonly added to muffins, because of small size:
 - More points of color and flavor per pound.
 - Better uniformity when added to batter.
 - Less fragile; will not tear and run into batter.
- Unattractive green discoloration in baked goods is from anthocyanin pigments, which are green at high pH.

Fruit Ripening

Ripening involves a series of changes.

- Varies with the fruit, but, in general, fruits
 - Soften and become juicier.
 - Develop more color and flavor.
 - Become sweeter and less sour.
- Caused by the action of enzymes that break down large molecules into smaller ones.
 - *Examples:* starches break down to sugars that sweeten, soften; pectin breaks down, to soften.
- Requires plant to respire, or take in oxygen from air.

Fruit Ripening

Some fruits cannot ripen after they are picked, or harvested.

- Fruits that do not ripen after harvest include: Berry fruits, cherries, citrus, grapes, pineapples.
- When purchasing these fruits, accept only those that are already fully ripe.
- Do not judge ripeness by color alone.
 - Many fruits develop color sooner than they develop flavor. *Example:* blueberries.

Fruit Ripening

Some fruits can ripen at least partially after they are picked, or harvested.

- Fruit must be fully mature, that is, it must be full-sized.
- Fruit must be stored properly before ripening.
 - If exposed to cold temperatures first, some fruits, including peaches, mangoes, and papaya, will not ripen properly.

Fruit Ripening

Fruits that ripen after harvest include:

- Apples, bananas, cantaloupe, kiwi, mangoes, peaches, pears, plums.
- Some fruits ripen more completely than others.
 - Bananas ripen better after harvest than any other fruit. They soften, sweeten, and develop aroma.
 - Cantaloupes and papayas soften and develop color, but they will not sweeten or develop aroma once harvested.

Storage and Handling

Fresh fruits

- Wash just before use, to remove dirt and microorganisms.
 - Do not wash before storage; fruit could mold, soften, and swell.
- Store fruits under high humidity.
- Store ripe fruits at low temperatures.
 - Exception: store citrus and tropical fruits at 50–60°F (10–16°C) instead. Prevents chilling injury.
- Do not store in closed plastic bags unless bags are specially designed for fruit storage.

Storage and Handling

Fresh fruits

- Keep fruits that do not ripen after harvest away from those that do.
 - Fruits that ripen after harvest naturally give off ethylene gas, which causes fruits to ripen and rot.
 - *Example*: store lemons separate from apples.
- Remove and discard spoiled or rotten fruit,
 - Will give off ethylene gas and cause fruits to ripen and rot.

Storage and Handling

To ripen fresh fruit fast:

- Store in warm area.
- Add a ripe banana or ripe apple.
 - Both give off large amounts of ethylene, which speeds ripening.
- Place in closed paper bag or cardboard carton.
 - Traps ethylene gas given off by banana/apple inside bag.
 - Allows continuous flow of oxygen, required for ripening, to pass into bag.

Storage and Handling

Dried fruits

- Cover, to prevent moisture loss.
- Store below 45°F (7°C), if possible; prevents
 - Color and flavor changes.
 - Insect and rodent infestations.
- If sugar crystallizes during cold storage, condition fruit before use, to revive flavor and texture.
 - Submerge in warm water or another liquid, then immediately drain; set aside for several hours.
 - Add 1–2 ounces of warm liquid per pound of dried fruit (80–120 grams per kilogram); toss, then set aside several hours.