



INSTRUCTIONS FOR INSPECTION

of

CANNED PLUMS

For Use of USDA Processed Products Inspectors

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
FRUIT AND VEGETABLE DIVISION
PROCESSED PRODUCTS STANDARDIZATION AND INSPECTION BRANCH

P R E F A C E

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GENERAL INFORMATION

Color of the skin and flesh is an indicator of plum maturity. Purple plums are ripe for canning when the (1) skin is deep-purple color; and (2) flesh is amber color and separates from the pit. Immature purple plums have (1) poor character; (2) mushy flesh; (3) poor separation of flesh and pit; and (4) poor flavor. Over-ripe plums have (1) brownish, lifeless color; (2) loss of character; and (3) loose pits.

Plums wrinkle near the stem-end at the beginning of the prune stage. Plums at the prune stage are too ripe for canning. At the prune stage, plums (1) process hard; (2) turn "dead-brown" to purple-black color; (3) wrinkle; and (4) have pits that adhere to the flesh which often discolors the flesh (pit browning).

Some varieties of high-sugar plums are suitable for drying into prunes. Any canned fresh plums, but not dried prunes, of the varietal types mentioned in the U.S. standards are considered "canned plums."

VARIETAL TYPES

Purple plum group.

Italian prune plum.

The Italian prune plum is well adapted to canning. Some of its characteristics are as follows:

1. Medium size;
2. Long-oval shape with enlarged suture side;
3. Purplish-black color;
4. Thin, slightly tough skin;
5. Yellow, firm, juicy, subacid, slightly aromatic flesh;
6. Freestone; and
7. Pit is sharp pointed.

Stanley prune plum.

The Stanley prune plum is grown principally in Michigan.

VARIETAL TYPES (CONTINUATION)

Green-yellow group.

Green-yellow plums are light-colored, and sweet but slightly tart. These varieties fall into two subgroups: green-gage and yellow-egg. Some varieties of green-yellow plums lose their varietal characteristics after canning and are marketed interchangeably.

Green-gage plums include such varieties as: Reine Claude, Bavay, Yellow-gage, Washington, and Jefferson. Yellow-egg plums include such varieties as: Yellow-egg and Golden Drop.

SAMPLE UNIT

A sample unit is as follows:

1. The entire contents of a container; or
2. A portion of the contents of a container; or
3. A combination of the contents of two or more containers.

The U.S. standards specify a standard sample unit size. Each sample unit must contain a specified number of plums (25 whole plums or 50 halves). Prior to sampling small-size containers, determine the approximate count of plums in the container.

When more than one container is required to obtain the sample unit size, take all of the containers from the same case until the sample unit size is reached. Mark each container in the sample unit to retain its identity.

If only one container is required to meet the sample unit size, take only one container from each case selected for sampling.

GENERAL PROCEDURES

The acidity of plums causes pinholing of metal containers. Purple plums are canned in enamel-lined cans. Other plums are packed in plain interior cans. Record the kind and condition of the container. This is important in purple plums because buyers expect enamel-lined cans.

The FDA Standards of Identity permit nutritive carbohydrate sweeteners, water, fruit juices either single strength, mixed with water, or mixed with nutritive carbohydrate sweeteners as packing media. There are no minimum Brix limits for water and fruit juices. However, make and record Brix readings for plums packed in water or fruit juices. If more than one container is used to form the standard sample unit size, determine the Brix of only one container in each sample unit.

Handle canned plums gently. Do not dump "whole" plums from the draining sieve onto the grading tray. Remove the plums by hand. "Halves" may be gently poured from the draining sieve. Place the units on the grading tray in rows of equal numbers. It simplifies the counting of defects. Also record the number of plums in each container.

QUALITY FACTORS

Similar varietal characteristics.

"Similar varietal characteristics" refer to general varietal color, size, shape, pit formation, or other identification. It is a requirement of all grades above Substandard. All plums in a single container need not have identical characteristics. Only mixed varietal types that seriously detract from the overall appearance are considered as failing the requirement. It's possible to mix Stanley prune plums and Italian prune plums without failing the requirement.

Flavor and odor.

Normal flavor and odor is a requirement of all grades above Substandard. Sample units that fail flavor and odor requirements, but are edible, are Substandard. Consider them "deviants" and include them with other quality factors (collectively) in accordance with the "Regulations." Inedible sample units are "worse-than-a-deviant."

QUALITY FACTORS (CONTINUATION)

Color.

Purple plums.

The characteristic color of canned purple plums is a range of rich-amber-brown to deep-garnet-purple. Color covers the brightness of the skin, and any exposed flesh. "Mottling" of the skin is characteristic. It does not penetrate the skin.

"Dead-brown" color of purple plums.

"Dead-brown" color means a lifeless, dull, brown color due to overripeness, immature fruit, or prolonged storage.

Clearness of packing liquid of purple plums.

The color and clarity of the packing liquid of purple plums is indicative of properly ripened and properly processed plums. It is a related factor in scoring color. Consider clearness of liquid as follows:

Grade A - The liquid is highly colored and clear. Slight amounts of flocculent material may be present.

Grade B - The liquid need not be distinctly purple. It may be lighter in color and reasonably clear.

Grade C - No requirement for liquid.

Green-yellow plums.

Consider the intensity of color characteristic of the varietal group. The color of the liquid is not a scoreable factor for green-yellow plums. These plums are frequently packed in glass.

Canned plums packed in heavier sirups have more luster than those packed in light sirup, juice, or water. Disregard brightness created by the sirup in scoring color. Score canned purple plums immediately after removing from the draining sieve. Exposure to air causes the color to deteriorate. Green-yellow plums do not change color rapidly when exposed to air.

QUALITY FACTORS (CONTINUATION)

Uniformity of size.

"Uniformity of size" refers to the variation of the weight among plums in the standard sample unit. It does not cover shape. Halved plums are not required to be cut along the suture. Actual experience in weighing plums makes it unnecessary to weight all of the plums in each sample unit. Pick the sample unit which has the greatest variation of size by visual examination. Determine compliance of the worst sample unit with limits for the grade classifications. Other sample units in the sample can be compared to the results of the worst sample unit. Use a gram scale or a scale calibrated to the nearest 1/10-ounce. Refer to Inspection Aids in the general handbook for weight/percentage relationship.

Defects.

Canned plums are rarely peeled or trimmed for canning. Unless plums are sorted closely prior to canning, insect infestation, decay, and defects present on the fresh fruit are carried through to the canned plums. Even with close sorting, defects on purple plums are difficult to find. Market demand does not require heavy sorting of purple plums. Many processors attempt to pack only grade B or grade C plums, unless plums are packed in glass.

Growth cracks are distinguishable by oxidation along the edge of the crack or by a scab-like appearance. Brown rot is more prevalent during seasons of hot, humid weather. Other kinds of defects are: gummosis, hairmarks, sunburn, sunscald, split pits, russeting, scars, and bruise.

Deformities not considered as defects.

1. "Mottling" not associated with defects or any abnormality;
2. Shriveled plums; or
3. Internal gummosis not associated with any hard, protruding area on the surface.

QUALITY FACTORS (CONTINUATION)

Defects (continuation).

Gummosis.

Gummosis in fresh plums is a yellow, wax-like substance. In canned plums it turns reddish or reddish-purple color and appears as a gelatin-like mass in either the flesh or on the surface of the plums. Gummosis accumulates between the pit and the surface, and may force its way through the skin. When it has broken through the skin, a hard knot similar to a healed-over insect bite or a gelatin-like mass appears on the surface.

Internal gummosis.

Internal gummosis not associated with a healed-over break on the skin (hard knot) is not scoreable as a defect.

External gummosis.

"External gummosis" is as follows:

1. A hard knot or a healed-over break on the skin. An exuded gelatin-like substance is or has been present on the surface; or
2. A hard knot or a healed-over break on the skin. An exuded gelatin-like substance is not present on the surface, but is present in the flesh of the plum.

Score "external gummosis" as "blemished" when it materially affects the appearance of the plum. Do not score if it slightly affects the appearance of the plum. Score "external gummosis" as "seriously blemished" when it seriously affects the appearance and eating quality of the plum.

Small stem.

A "small stem" is the stem which attaches the plum to the twig. Score a "small stem" whether found loose in the container or attached to a plum.

QUALITY FACTORS (CONTINUATION)

Defects (continuation).

Harmless extraneous material.

HEM includes leaves, leafy material, and stems (other than short stems). Count each piece of HEM as one defect, regardless of size. If two or more leaves are attached to each other as one unit, count as one defect against HEM. If leaves are attached to a twig, as one unit, count as one defect against HEM. If a unit of HEM includes a "small stem", count the unit as one defect against HEM and ignore the "small stem."

Peel in peeled plums.

Grade A - Allow 1/4 square inch of peel per pound of total contents (sample average).

Grade B - Allow 1/2 square inch of peel per pound of total contents (sample average).

Grade C - Allow 1 square inch of peel per pound of total contents (sample average).

Individual sample unit - Allow twice the sample average requirement for the applicable grade classification.

Brown rot.

Two common decays affect plums: brown rot and rhizopus rot. "Rhizopus rot" is soft. "Brown rot" is difficult to find on purple plums.

"Brown rot" appears as dark, circular areas with the center of the circle broken and star-shaped lesions extending to the edge of the circle. Include "brown rot" in the allowance for "seriously blemished" units. See also Branch guidelines for natural and unavoidable defects in food for human use.

Split skins.

Some plums crack or split during processing. Some tough skinned varieties do not crack or split. Also some processors intentionally overcook to cause split skins, and some do not. Consider broken skins under "character" if the skins crack and cause the plums to be soft. Do not consider split skins under defects.

QUALITY FACTORS (CONTINUATION)

Character.

Character refers to the texture and condition of the fruit flesh in relation to ripeness or maturity. Generally, skin color and flesh color are indicators of maturity. Plums may be slightly on the immature side and be of proper ripeness for canning.

Well-matured purple plums should be ripe enough for the pit to separate from the flesh of the plum. Green-yellow plums do not have the "freestone" characteristic.

Shriveled areas on plums.

Shriveled areas normally are found on the stem-end of purple plums. It's caused by sugaring or natural dehydration. Canning may bring slightly shriveled plums to normal texture. Tough and leathery shriveled areas are scored as either "fairly good character" or "poor character," depending on the severity of shriveling.