



**United States
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**Agricultural
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Division**

**Fresh
Products
Branch**

United States Standards for Grades of Radishes

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United States Standards for Grades of Radishes¹

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Styles

§51.2395 Topped radishes.

"Topped radishes" means radishes with the tops clipped back to not more than three-eighths inch in length.

§51.2396 Bunched radishes.

"Bunched radishes" means radishes with full length tops which are tied in bunches.

¹Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act, or with applicable State laws and regulations.

Grades

§51.2397 U.S. No. 1.

"U.S. No. 1" consists of radishes of similar varietal characteristics the roots of which are clean, well formed, smooth, firm, tender, and free from decay and free from damage caused by freezing, growth cracks or air cracks, cuts, pithiness, disease, insects, or other means. Bunched radishes have tops which are fresh and free from decay and free from damage caused by freezing, seedstems, yellowing or other discoloration, disease, insects, or other means.

(a) Unless otherwise specified, the diameter of each root shall be not less than five-eighths inch.

(b) In order to allow for variations incident to proper grading and handling, the following tolerances are provided:

(1) **For defects of roots.** 10 percent, by count, for roots in any lot which fail to meet the requirements for the grade, including therein not more than 1 percent for decay;

(2) **For defects of tops of bunched radishes.** 10 percent, by count, for bunches in any lot which fail to meet the requirements for the grade, including therein not more than 5 percent for decay;

(3) **For off-size roots.** 10 percent, by count, for roots in any lot which fail to meet the specified minimum diameter: **Provided**, That when both minimum and maximum diameters are specified, an additional tolerance of 10 percent shall be allowed for roots which are larger than the maximum diameter specified; and,

(4) **For excess length of tops of topped radishes.** 5 percent, by count, for roots in any lot with tops which are more than three eighths inch long.

§51.2398 U.S. Commercial.

"U.S. Commercial" consists of radishes which meet the requirements for the U.S. No. 1 grade except for the increased tolerances specified in this section.

(a) In order to allow for variations incident to proper grading and handling, the following tolerances are provided:

(1) **For defects of roots.** 20 percent, by count, for roots in any lot which fail to meet the requirements for the grade, but not more than one-half of this amount, or 10 percent, shall be allowed for serious damage, including therein not more than 1 percent for decay;

(2) **For defects of tops of bunched radishes.** 10 percent, by count, for bunches in any lot which fail to meet the requirements for the grade, including therein not more than 5 percent for decay;

(3) **For off-size roots.** 10 percent, by count, for roots in any lot which fail to meet the specified minimum diameter: **Provided**, That when both minimum and maximum diameters are specified, an additional tolerance of 10 percent shall be allowed for roots which are larger than the maximum diameter specified; and,

(4) **For excess length of tops of topped radishes.** 10 percent, by count, for roots in any lot with tops which are more than three eighths inch long.

Sample for Grade Determination

§51.2399 Sample for grade determination.

(a) Topped radishes: Each sample shall consist of 50 roots.

(b) Bunched radishes:

(1) When applying the requirements for tops, each sample shall consist of 25 bunches.

(2) When applying the requirements for roots, each sample shall consist of 50 roots taken from whole or part bunches selected at random from the original 25-bunch sample.

- (c) When individual packages contain less than 50 topped radishes or less than 25 bunches, a sufficient number of adjoining packages are opened to obtain the prescribed size sample.
- (d) When practical, at point of packing, the sample may be obtained in the packing house from the belt or bin after sorting has been completed.

Application of Tolerances

§51.2400 Application of tolerances.

Individual samples shall have not more than one and one-half times a specified tolerance of 10 percent, and not more than double a specified tolerance of less than 10 percent: **Provided**, That two roots affected by decay may be permitted in any sample: **And provided further**, That the averages for the entire lot are within the tolerances specified for the grade.

Standard Bunching

§51.2401 Standard bunching.

- (a) Standard bunches of radishes shall be fairly uniform in size, and radishes in the individual bunches shall not vary more than one-half inch in diameter.
- (b) Not more than 10 percent of the bunches in any lot may fail to meet the requirements for "Standard Bunching."

Size Terms

§51.2402 Size terms.

- (a) The following terms are provided for describing the diameters of radish roots:
- (1) "Small" means less than three-fourths inch in diameter;
 - (2) "Medium" means three-fourths to 1 inch in diameter;
 - (3) "Large" means over 1 to 1-1/4 inches in diameter; and,
 - (4) "Very large" means over 1-1/4 inches in diameter.

Definitions

§51.2403 Similar varietal characteristics.

"Similar varietal characteristics" means that the radishes in any sample are similar in color and shape; for example, red varieties shall not be mixed with white varieties and globe-shaped varieties shall not be mixed with long-shaped varieties.

§51.2404 Clean.

"Clean" means that the radishes are practically free from dirt or other foreign material.

§51.2405 Well formed.

"Well formed" means that the root has the shape characteristic of the variety.

§51.2406 Smooth.

"Smooth" means that the root is not rough, or ridged to the extent that the appearance is materially affected.

§51.2407 Firm.

"Firm" means that the root is crisp and not soft, flabby, or wilted.

§51.2408 Tender.

"Tender" means that the root is not stringy or woody.

§51.2409 Damage.

"Damage" means any specific defect described in this section; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which materially detracts from the appearance, or the edible or marketing quality of the individual radish, the

individual bunch of radishes, or the appearance of the sample as a whole. The following specific defects shall be considered as damage:

- (a) Growth cracks or air cracks:
 - (1) When more than one are present;
 - (2) When the flesh is discolored;
 - (3) When more than one-fourth inch deep; or,
 - (4) When the length of any crack exceeds the limitations set forth in Table I.
- (b) Cuts, including harvester cuts and abrasions:
 - (1) When the flesh is discolored;
 - (2) When rough or deep;
 - (3) When the area of exposed flesh of any cut exceeds the limitations set forth in Table I; or,
 - (4) When the aggregate of all cuts or abrasions detracts from the appearance more than the maximum size single cut permitted.

TABLE I

| Diameter of root | Maximum length of growth crack or air crack permitted | Maximum area of cut permitted - equivalent to: |
|------------------|---|--|
| 5/8 inch | 3/8 inch | 3/8 inch circle |
| 3/4 inch | 1/2 inch | 1/2 inch circle |
| 7/8 inch | 1/2 inch | 1/2 inch circle |
| 1 inch | 5/8 inch | 5/8 inch circle |
| 1-1/8 inch | 5/8 inch | 3/4 inch circle |

- (c) Pithiness when there is any distinctly open space, or when more than one-fourth of the surface at a center cut is dry and cottony;
- (d) Insects or insect injury when the appearance of the root is materially affected, or when the injury penetrates into the flesh of the root or when the tops are affected to the extent that the appearance of the bunch is materially affected; and,
- (e) Yellowing or other discoloration of the tops when the appearance of the bunch is materially affected. The appearance of bunches with tops having slight discoloration such as yellowing, browning, or other abnormal color affecting a few leaves shall not be considered materially affected if the tops as a whole show a predominantly normal green color.

§51.2410 Fresh.

"Fresh" means that the tops have normal green color and are not more than slightly wilted.

§51.2411 Diameter.

"Diameter" means the greatest dimension of the root measured at right angles to a line running from the crown to the base of the root.

§51.2412 Serious damage.

"Serious damage" means any defect or any combination of defects which seriously detracts from the appearance, or the edible or marketing quality of the individual root or the appearance of the

bunch.

Metric Conversion Table

§51.2413 Metric conversion table.

| Inches | Millimeters (mm) |
|---------------|-------------------------|
| 1/8 | 3.2 |
| 1/4 | 6.4 |
| 3/8 | 9.5 |
| 1/2 | 12.7 |
| 5/8 | 15.9 |
| 3/4 | 19.1 |
| 7/8 | 22.2 |
| 1 | 25.4 |
| 1-1/4 | 31.8 |
| 1-1/2 | 38.1 |