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# United States Standards for Grades of Frozen Lima Beans

**Effective August 29, 2013**

This is the ninth issue, as amended, of the United States Standards for Grades of Frozen Lima Beans published in the FEDERAL REGISTER of July 30, 2013 (78 FR 45907) to become effective August 29, 2013. This issue supersedes the eighth issue, which has been in effect since March 22, 1957.

Voluntary U.S. grade standards are issued under the authority of the Agricultural Marketing Act of 1946, which provides for the development of official U.S. grades to designate different levels of quality. These grade standards are available for use by producers, suppliers, buyers, and consumers. As in the case of other standards for grades of fresh and processed fruits and vegetables, these standards are designed to facilitate orderly marketing by providing a convenient basis for buying and selling, for establishing quality control programs, and for determining loan values.

The U.S. grade standards, grading manuals, handbooks or instructions for inspection of several fresh and processed fruits and vegetables are available on the internet and upon request at the address below. These manuals or instructions contain detailed interpretations of the grade standards and provide step-by-step procedures for grading the product.

Grade standards are issued by the Department after careful consideration of all data and views submitted, and the Department welcomes suggestions which might aid in improving the standards in future revisions. Comments may be submitted to, and copies of standards and grading manuals obtained from:

Director, Specialty Crops Inspection Division  
Fruit and Vegetable Program, AMS, U.S. Department of Agriculture  
1400 Independence Avenue, SW, STOP 0240  
Washington, D.C. 20250  
Phone: (202) 720-5870 Fax: (202) 720-0393

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**Authority:** 7 U.S.C. 1621-1627.

**Note:** Compliance 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.

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**§52.501 Product description.**

Frozen lima beans means the frozen product prepared from the clean, sound, succulent seed of the lima bean plant without soaking, by shelling, washing, blanching, and properly draining, and is then frozen in accordance with good commercial practice and maintained at temperatures necessary for the preservation of the product.

**§52.502 Types of frozen lima beans.**

- (a) Thin-seeded such as Henderson, Bush and Thorogreen varieties.
- (b) Thick-seeded Baby Potato such as Baby Potato, Baby Fordhook, and Evergreen.
- (c) Thick-seeded, such as Fordhook variety.

**§52.503 Grades of frozen lima beans.**

- (a) **U.S. Grade A** is the quality of frozen lima beans that possess similar varietal characteristics; that possess a good flavor; that are tender; that possess a good color; that are practically free from defects; and that score not less than 90 points when scored in accordance with the scoring system outlined in this subpart.
- (b) **U.S. Grade B** is the quality of frozen lima beans that possess similar varietal characteristics; that possess a good flavor; that are reasonably tender; that possess a reasonably good color; that are reasonably free from defects; and that score not less than 80 points when scored in accordance with the scoring system outlined in this subpart.
- (c) **U.S. Grade C** is the quality of frozen lima beans that possess similar varietal characteristics; that possess a fairly good flavor; that are fairly tender; that possess a fairly good color; that are fairly free from defects; and that score not less than 70 points when scored in accordance with the scoring system outlined in this subpart.
- (d) **Substandard** is the quality of frozen lima beans that fail to meet the requirements of U.S. Grade C.

**§52.504 Ascertaining the grade.**

- (a) **General.** In addition to considering other requirements outlined in the standards, the following quality factors are evaluated:
  - (1) **Factors not rated by score points.**
    - (i) **Varietal characteristics.**

- (ii) **Flavor.**
- (iii) **Tenderness.**
- (2) **Factors rated by score points.** The relative importance of each factor which is scored is expressed numerically on the scale of 100. The maximum number of points that may be given each such factor is:

<b>Factors</b>	<b>Points</b>
Color	60
Defects	<u>40</u>
Total Score	100

- (b) The scores for the factors of color and absence of defects are determined immediately after thawing to the extent that the product is substantially free from ice crystals and can be handled as individual units. The evaluation of the factors of tenderness and flavor of frozen lima beans is made after thawing and after the product is cooked.
- (c) **Good flavor** means that the product has a good, characteristic, normal flavor and odor and is free from objectionable flavors and objectionable odors of any kind.
- (d) **Fairly good flavor** means that the product may be lacking in good flavor and odor but is free from objectionable flavors and objectionable odors of any kind.

**§52.505      Ascertaining the rating for the factors which are scored.**

The essential variations within each factor which is scored are so described that the value may be ascertained for such factors and expressed numerically. The numerical range within each factor which is scored is inclusive (for example, 54 to 60 points means 54, 55, 56, 57, 58, 59, or 60 points).

**§52.506      Color.**

- (a) **General.** The color of frozen lima beans has reference to the color characteristic of the individual lima bean.
- (1) **Green** means that not less than 50 percent of the surface area of the individual lima bean possesses as much or more green color than U.S.D.A. lima bean green color standard for frozen lima beans.

- (2) **White** means that more than 50 percent of the surface area of the individual lima bean is lighter in color than U.S.D.A. lima bean white color standard for frozen lima beans.
- (3) The U.S.D.A. frozen lima bean color standards conform to the International Commission on Illumination (ICl) and other color requirements as specified in Table No. 1 of this section.

**Table No. 1**  
**Color Requirements for U.S.D.A. Color Standards for Frozen Lima Beans**

Color designation	Daylight directional reflectance	Chromaticity coordinates	
		x	y
U.S.D.A. lima bean green color standard	40.4	.3715	.4576
U.S.D.A. lima bean white color standard	63.5	.3731	.4016

- (4) Information regarding these color standards may be obtained by contacting the Specialty Crops Inspection Division.
- (b) **"A" classification.** Frozen lima beans that possess a **good color** may be given a score of 54 to 60 points. **Good color** means that the lima beans, regardless of type, possess a bright typical color and meet the following additional color requirements for the respective types:
  - (1) Thin-seeded type (with skins removed); Thick-seeded Baby Potato type (with skins on).
    - (i) Not less than 93 percent, by count, of the lima beans are green and not more than 7 percent, by count, may be lighter in color: Provided, that not more than 1 percent, by count, of all the lima beans are white, or
    - (ii) Not less than 97 percent, by count, of the lima beans are green and not more than 3 percent, by count, may be lighter in color or white lima beans.
  - (2) **Thick-seeded type (with skins on).** Not less than 85 percent, by count, of the lima beans are green and not more than 15 percent, by count, may be lighter in color: Provided, that not more than 1 percent, by count, of all the lima beans are white.

- (c) **"B" classification.** If the frozen lima beans possess a **reasonably good color**, a score of 48 to 53 points may be given. Frozen lima beans that fall into this classification shall not be graded above U.S. Grade B regardless of the total score for the product (**this is a limiting rule**). **Reasonably good color** means that the lima beans, regardless of type, possess a typical color and meet the following additional requirements for the respective types:
- (1) **Thin-seeded type (with skins removed); Thick-seeded Baby Potato type (with skins on).** Not less than 65 percent, by count, of the lima beans are green and not more than 35 percent, by count, may be lighter in color or white lima beans.
  - (2) **Thick-seeded type (with skins on).** Not less than 60 percent, by count, of the lima beans are green and not more than 40 percent, by count, may be lighter in color: **Provided, that not more than 5 percent, by count, of all the lima beans are white.**
- (d) **"C" classification.** If the frozen lima beans possess a **fairly good color**, a score of 42 to 47 points may be given. Frozen lima beans that fall into this classification shall not be graded above U.S. Grade C regardless of the total score for the product (**this is a limiting rule**). **Fairly good color** means that the lima beans, regardless of type, possess a typical color and meet the following additional requirements for the respective types:
- (1) **Thin-seeded type (with skins removed); Thick-seeded Baby Potato type (with skins on).** Less than 65 percent, by count, of the lima beans are green and all of the lima beans may be white.
  - (2) **Thick-seeded type (with skins on).** Less than 60 percent, by count, of the lima beans are green: **Provided, that not more than 20 percent, by count, of all the lima beans are white.**
- (e) **"SStd" classification.** Frozen lima beans that are definitely **off color** or fail to meet the requirements of paragraph (d) of this section may be given a score of 0 to 41 points and shall not be graded above Substandard, regardless of the total score for the product (**this is a limiting rule**).

**§52.507 Defects.**

- (a) **General.** The factor of defects refers to the degree of freedom from harmless extraneous vegetable material, from pieces of beans, shriveled beans, sprouted beans, light discoloration, and from beans that are blemished or seriously blemished.
- (1) **Harmless extraneous vegetable material means:**
- (i) Predominantly flat or predominantly cylindrical, green, tender vegetable material, such as pieces of pods or leaves and stems of the lima bean plant; and

- (ii) Predominantly spherical vegetable material, such as seeds from other plants.
- (2) **Piece of bean (broken bean) means:**
  - (i) A whole bean from which one-half or more of a cotyledon or the equivalent thereof has become detached;
  - (ii) Two detached whole cotyledons;
  - (iii) Pieces of detached broken cotyledons aggregating the equivalent of one average size whole cotyledon; and
  - (iv) A whole detached skin or portions of detached skin aggregating the equivalent of an average size whole skin.
- (3) **Shriveled** means lima beans that are materially wrinkled and are not of normal plumpness.
- (4) **Sprouted** means lima beans that show an external shoot protruding prominently beyond the cotyledon or skin.
- (5) **Light discoloration** means light discoloration of the hilum or other light discoloration which slightly affects but does not materially affect the appearance or eating quality of the bean.
- (6) **Blemished** means blemished by discoloration or blemished by other means to the extent that the appearance or eating quality of the bean is materially affected.
- (7) **Seriously blemished** means blemished to such an extent that the appearance or eating quality of the bean is seriously affected.
- (b) **"A" classification.** Frozen lima beans that are **practically free from defects** may be given a score of 36 to 40 points. **Practically free from defects** means that:
  - (1) There may be present:
    - (i) **For each 10 ounces, net weight**, one piece, or pieces, of predominantly flat, harmless extraneous vegetable material having an aggregate area of 3/16 square inch (1/2 inch by 3/8 inch) on one surface of the piece, or pieces, and one predominantly cylindrical piece, or pieces, of harmless extraneous vegetable material not exceeding 1/2 inch in length in the aggregate; or
    - (ii) **For each 30 ounces**, net weight, one predominantly spherical piece of harmless extraneous vegetable material measuring not more than 1/4 inch in diameter.



- (2) There may be present:
  - (i) 5 percent, by count, of pieces of beans; <sup>1/</sup>
  - (ii) 1 percent, by count, of shriveled and sprouted beans;
  - (iii) 2 percent, by count, of blemished and seriously blemished beans, and of such 2 percent, not more than 1/4 thereof or 1/2 of 1 percent, by count, of all the beans may be seriously blemished; and that
- (3) The presence of harmless extraneous vegetable material, pieces of beans, shriveled and sprouted beans, light discoloration, and blemished and seriously blemished beans, individually or collectively, does not more than slightly affect the appearance or eating quality of the product.
- (c) **"B" classification.** If the frozen lima beans **are reasonably free from defects**, a score of 32 to 35 points may be given. Frozen lima beans that fall into this classification on account of the presence of shriveled or sprouted beans and of blemished or seriously blemished beans, shall not be graded above U.S. Grade B regardless of the total score for the product **(this is a partial limiting rule)**. **Reasonably free from defects** means that:

- (1) **There may be present:**
  - (i) **For each 10 ounces, net weight**, one piece, or pieces, of predominantly flat, harmless extraneous vegetable material having an aggregate area of 3/8 square inch (1/2 inch by 3/4 inch) on one surface of the piece, or pieces, and one predominantly cylindrical piece, or pieces, of harmless extraneous vegetable material not exceeding 3/4 inch in length in the aggregate; or
  - (ii) **For each 30 ounces, net weight**, two predominantly spherical pieces of harmless extraneous vegetable material measuring not more than 1/4 inch in diameter.
- (2) There may be present:
  - (i) 10 percent, by count, of pieces of beans; <sup>1/</sup>
  - (ii) 4 percent, by count, of shriveled and sprouted beans;

<sup>1/</sup> The percent, by count, of pieces of beans in the sample is determined by dividing the total number of pieces of beans by the total number of beans and pieces of beans and multiplying the quotient by 100.

- (iii) 3 percent, by count, of blemished and seriously blemished beans, and of such 3 percent, not more than 1/3 thereof or 1 percent, by count, of all the beans may be seriously blemished; and that
- (3) The presence of harmless extraneous vegetable material, pieces of beans, shriveled and sprouted beans, light discoloration, and blemished and seriously blemished beans, individually or collectively, does not materially affect the appearance or eating quality of the product.
- (d) **"C" classification.** Frozen lima beans that are **fairly free from defects** may be given a score of 28 to 31 points. Frozen lima beans that fall into this classification shall not be graded above U.S. Grade C regardless of the total score for the product (**this is a limiting rule**). **Fairly free from defects** means that:
  - (1) There may be present:
    - (i) **For each 10 ounces, net weight**, one piece, or pieces, of predominantly flat, harmless extraneous vegetable material having an aggregate area of 3/4 square inch (1/2 inch by 1-1/2 inch) on one surface of the piece, or pieces, and one predominantly cylindrical piece, or pieces, of harmless extraneous vegetable material not exceeding 1 inch in length in the aggregate; or
    - (ii) **For each 30 ounces, net weight**, three predominantly spherical pieces of harmless extraneous vegetable material measuring not more than 1/4 inch in diameter.
  - (2) There may be present:
    - (i) 15 percent, by count, of pieces of beans; <sup>1/</sup>
    - (ii) 8 percent, by count, of shriveled and sprouted beans;
    - (iii) 4 percent, by count, of blemished and seriously blemished beans, and of such 4 percent, not more than 1/2 thereof or 2 percent, by count, of all the beans may be seriously blemished; and that
    - (3) The presence of harmless extraneous vegetable material, pieces of beans, shriveled and sprouted beans, light discoloration, and blemished and seriously blemished beans, individually or collectively, does not seriously affect the appearance or eating quality of the product.

<sup>1/</sup> The percent, by count, of pieces of beans in the sample is determined by dividing the total number of pieces of beans by the total number of beans and pieces of beans and multiplying the quotient by 100.

- (e) **"SStd" classification.** Frozen lima beans that fail to meet the requirements of paragraph (d) of this section may be given a score of 0 to 27 points and shall not be graded above Substandard, regardless of the total score for the product (**this is a limiting rule**).

**§52.508      Ascertaining the grade of a lot.**

The grade of a lot of frozen lima beans covered by these standards is determined by the procedures set forth in the **Regulations Governing Inspection and Certification of Processed Products thereof, and certain other Processed Food Products (7 CFR 52.1 through 52.83)**.