

AFI Specifications For Shelled Brazil Nuts

General Requirements

- A. Each shipment inspected by FDA and USDA shall be of good quality, cleared by Customs, and stored in accordance with good commercial practice.
- B. The nuts shall be packed in new, clean, dry, leak proof containers/bags with an airtight (hermetic) seal and without internal paper liners, if appropriate. Packaging shall be of sufficient strength to assure the integrity of the product during normal shipment and storage.
 The outer container shall be constructed of a new cardboard/bag when appropriate, free of infestation and visual mold, and sealed without staples, unless otherwise specified by the end user.
- C. Moisture levels of the nuts should be in the range of 3-6 percent.
- D. All cartons shall be clearly marked on each end with the following:
 - a. Name of the product and trade name or brand name, if any;
 - b. Name and address of producer or packer;
 - c. Grade, crop year, date of packing (if known), net weight, country of origin and destination; and
 - d. Buyer's name and marks.
- E. Bill of Lading must list the number of cartons, source of origin, and the marks that are on the cartons.
- F. All handling, processing storage and transporting operation shall be conducted under those conditions of temperature and humidity necessary to preclude quality deterioration of the nuts. Fluctuations in temperature and relative humidity should be avoided to protect the integrity of the product. Fumigation is permitted in conformity with FDA regulations, except that EDB may not be used.
- G. All shipments should be inspected prior to loading and shall be carried on conveyances suitable for transporting food products in good condition, i.e. free of odors, insect or mold damage, rodent activity and all other foreign materials. Excessive breakage is avoided by control of moisture, proper storage, packing and handling. When it occurs it may reduce the grade contract for to a lower grade.

Specifications

| <u>Physical/Grade</u> | <u>Standard</u> |
|-----------------------|---------------------------------------------|
| Color | Light to dark brown skin, creamy white meat |
| Large (or Giants) | 80/110 kernels per pound |
| Mediums | 110/130 " " " |
| Smalls | 140/160 " " " |
| Midgets | 160/180 " " " |
| Tiny | 180/220 " " " |

| <u>Physical/Grade</u> | <u>Standard</u> |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chipped | N/A |
| Broken | N/A |
| Damage, Serious Damage, Shell & Foreign Material | Not more than (NMT) 10% damage, including NMT 5.0% serious damage; NMT 25 pieces per 1000 lbs. of shell and foreign material; and NMT 1.0% for rancid kernels. |

(Tolerances are percent by weight)

II. Damage

- A. **Damage** includes, but is not limited to, any of the following or combination of the following which detracts from the appearance, edibility or marketing quality of the nut, or the lot as a whole:
 - a. Dirt adhering to the surface of the nut;
 - b. Chipped or scarred kernels when the affected area on an individual kernel is greater than ¼ in. diameter;
 - c. Yellowing or minor discoloration of the nut meat interior;
 - d. Fat diffusion* translucent or watery around the complete circumference of a nut when cut in half;
 - e. Broken kernels, defined as: any kernel less than ¾ kernel.
- * Fat diffusion is allowed in broken and chipped grades. It is unavoidable once the surface of the kernel is cut.
- B. **Serious damage:** Any of the following or combination of the following which seriously detracts from the appearance, edibility or marketing quality of the nut, or the lot as a whole.

Serious damage includes but is not limited to:

- a. Insect damage: when the insect, insect fragment, frass or web is present, or the kernel shows definite evidence of insect feeding;
- b. Mold damage;
- c. Rancidity/staleness: kernels noticeably rancid or stale to the taste. Rancid nuts generally show severe internal discoloration;
- d. Decay, affecting any portion of the kernel;
- e. Shriveling;
- f. Scorched centers due to overheating during drying;
- g. Foreign material: pieces of shell, pod (coco), pod fibers, stem or any substance other than the Brazil kernel or portions of kernels;
- h. Adhering shells attached to the kernel.

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III. Sensory Evaluation

| | |
|---------|-------------------------------------------------------------------------------------------------------|
| Flavor | Good typical brazil nut flavor; free from rancid, strong, stale, flat, astringent or foreign flavors. |
| Odor | Characteristic brazil nut odor; without off or foreign odors. |
| Texture | Kernels are firm; not brittle, pliable or leathery. |

IV. Chemical

Moisture¹ Not less than (NLT) 1.5%, NMT 6.0%

*Rancidity Indicators**

| | |
|-------------------------------|----------------------------------------------------|
| Free fatty acids ² | NMT 0.5% |
| Peroxide value ³ | NMT 10mg/kg |
| Yellow centers | Included in damage, indicative of age. |
| Fat diffusion | Included in damage, indicative of improper drying. |

* Organoleptic tests are the primary means for determining rancidity. Careful consideration of all information is necessary for a meaningful interpretation of the true product quality.

Aflatoxin⁴ Less than 20 parts per billion.

V. Microbiological

| | |
|------------------------------------|----------|
| Salmonella ⁵ | Negative |
| Staphylococcus aureus ⁶ | Negative |
| E. Coli ⁷ | Negative |

VI. Extraneous Material

| | |
|------------------------------|----------------------------------------------------|
| Rodent activity ⁸ | Free of confirmed evidence of rodent activity |
| Infestation | Free of live or gross evidence of infestation |
| Filth ⁹ : | |
| Whole insects | 0/100g |
| Insect fragments | average NMT 5/1000g; no one test to exceed 10/100g |
| Rodent hair | NMT one per test sample |

VII. Pesticide Residues

Meets all state and federal regulatory requirements.

VIII. Fumigants

Only EPA approved fumigants may be used as considered necessary. Residues may not exceed EPA tolerance levels.

IX. Chemical Additives

No antioxidants, preservatives, or other types of chemical additives may be used.

References

1. AOCS, Ab 2-49
 2. AOCS, Ca 5a-40
 3. AOCS, Cd 8053
 4. AOAC, 15th Ed., Method II, 26.003 and 26.034
Also: AOAC, 15th Ed., 970.45
 5. BAM, 1984, 6th Ed., pp. 7.01-7.18
 6. BAM, 1984, 6th Ed., pp. 14.01-14.05
 7. BAM, 1984, 6th Ed., pp. 5.01-5.07
 8. AOAC, 15th Ed., 945.88, 963.28
 9. AOAC, 15th Ed., 968.33
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