United States Department of Agriculture

Agricultural Marketing Service, Specialty Crops Program, Specialty Crops Inspection Division

PATCH # 094

DOCUMENT: Walnuts (Juglans regia) In the Shell and Shelled Inspection Instructions, December 1974

REMARKS: The **"In-line" Inspections** section on page 33 is revised to read as follows:

"In-line" Inspections

When samples are being selected from the conveyors or containers (open or sealed) at the end of the sorting and packing line, a sample analysis should be selected every 30 minutes or every 2,000 pounds, whichever comes first.

Under continuous inspection, with samples being analyzed at 30-minute intervals or more frequently, there may be relatively little variation in the quality between consecutive subsamples. The average of these periodic subsamples constitutes the grade of the total pack.

Use the following chart to determine the minimum quantity to analyze per subsample based on the size of the walnuts being inspected.

		Minimum quantity analyzed per subsample
		In-Line Per 2,000 pounds or every 30 minutes (whichever comes first)
Size	**Small Pieces**	30 grams
	Pieces	50 grams
	Halves & Pieces	100 grams
	Halves	200 grams

This PATCH represents official guidance. This PATCH is scheduled to be incorporated into the document listed above. After incorporation into the document listed above this PATCH will become obsolete. USDA is an equal opportunity provider, employer, and lender.

United States
Department of
Agriculture

Agricultural
Marketing
Service

Fruit and
Vegetable
Division

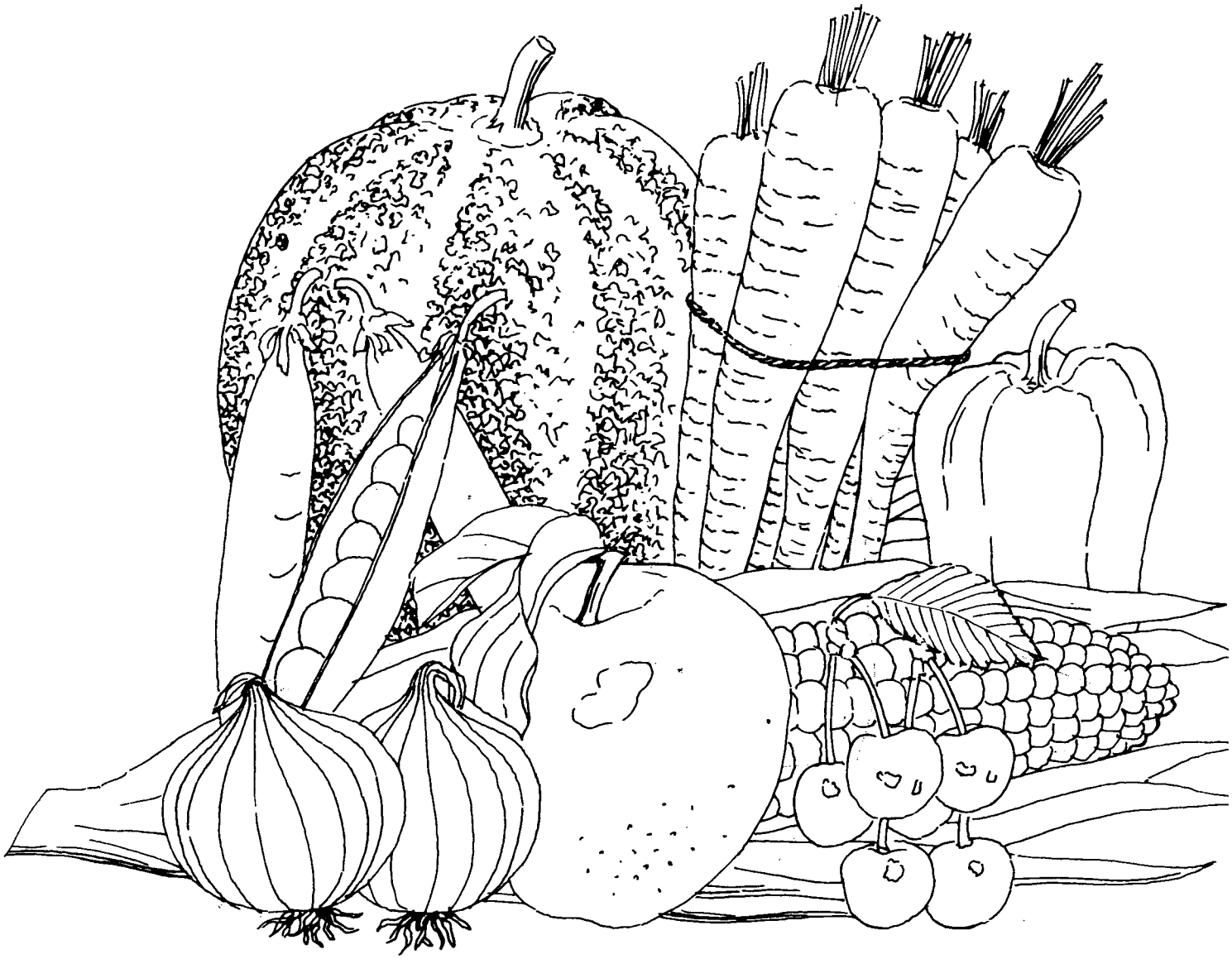
Fresh Products
Branch

Washington, DC

December 1974

Walnuts
(Juglans regia)
In the Shell and Shelled

Inspection Instructions



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PART II
SHELLED WALNUTS

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
FRUIT AND VEGETABLE DIVISION
FRESH PRODUCTS BRANCH

INSPECTION INSTRUCTIONS FOR WALNUTS 1/ 2/

GENERAL

(1) These instructions apply only to "English" Walnuts, sometimes called Persian Walnuts after their country of origin. Commercial planting of walnuts in the United States is confined almost entirely to the Pacific Coast States, with over 90% of the total volume being produced in California and most of the remainder in Oregon. They are also grown in substantial volume in France, Italy, Turkey and Yugoslavia.

(2) Domestic production consists almost entirely of selected, named varieties from budded or grafted trees. Leading varieties are the Franquette, Hartley, Eureka, Mayette, Payne, Concord and Nugget. Newer named varieties of prominence are Waterloo, Marchetti, Adams, Drummond, and Trinta. Hundreds of other varieties, named or numbered, are being tested.

1/ These instructions supersede "Shipping Point and Market Handbook For Walnuts" issued September, 1960.

2/ These instructions do not establish a new or revised substantive rule (United States Standards For Grades Of Walnuts (Juglans regia) In The Shell and Shelled Walnuts, CFR Secs. 51.2945-51.2966 and 51.2275-51.2296 respectively).

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(3) Walnuts are generally cleaned, bleached, sized and sorted prior to being packed for shipment. While a substantial portion of the crop is marketed in the shell, over half of the crop is now marketed as shelled walnuts.

PART I

WALNUTS IN THE SHELL

(4) There are two types of certification used on walnuts in the shell at shipping point. In most respects they are identical, but they differ in their primary purpose, and may differ in the methods of sample selection and in the form of certificate used. Each is described below.

SAMPLING

(5) "In-line" Inspections provide a means of quality control of packing operations, and assure conformance with marketing order requirements. Except for the comparatively few instances in which the containers are loaded directly into a car or truck when inspected or are state-lot stamped, there is no identification to connect the lot with the certificate.

(6) Sampling Procedure. In this procedure, samples usually are taken at the end of the sizing and grading line at the time of packing. The inspector draws and analyzes samples as rapidly as possible so that he may keep the applicant posted at all times regarding conformity with the intended grade, and so that the size of the lot to be regraded may be kept as small as possible, if regrading becomes necessary.

Samples should be taken at frequent intervals from the end of a conveyor belt or from containers being filled. These samples must be composited and thoroughly mixed. Every 20 or 30 minutes a portion of the composite sample should be analyzed for grade, then a new sampling routine should be started again. It is better to grade samples immediately after they are obtained than to wait until numerous samples have accumulated. To accomplish this, it will often be necessary to grade a 25 or 50-nut sample rather than the customary 100-nut sample. (7)

A small scoop, box or can should be used to draw the sample when practical so that defective or undersize specimens will be included proportionately in the sample. Automatic samplers have been found to be more accurate than hand sampling, and installation of automatic sampling equipment is recommended for packing lines. (8)

Certificates reporting "in-line" inspections need only report the minimum information requested by the applicant and/or the manager of the marketing order. This usually will consist of the product, the applicant's count or net weight, brand and the grade. If there are code or lot numbers on the containers, they should be quoted. The certificate will usually be some form of handwritten or short form certificate. The inspector's field notes usually will be in the form of a master note sheet which will be attached to the copy of the certificate that is filed in the State Supervisor's office or some other office designated by him. (9)

(10) Car, Truck or Lot Inspections. Lots that are loaded into cars or trucks, stacked in a warehouse, or that are state-lot stamped at time of inspection, should be certified on a typed or handwritten certificate. Such certificates are intended for use in making sales and in adjusting claims. The inspector's note sheet, covering the certified lot, must be attached to the copy of the certificate that is filed in the inspection office.

(11) Procedures for the inspection of specific sized lots or load will vary with circumstances. Methods used will depend upon whether the lot is completely packed or being packed, the type of containers and whether the lot is loaded in a car or truck. In all cases, it is very important that the sample be as representative as possible.

(12) Sampling During Packing. When sampling is done while the lot is still being packed, the procedure should be practically the same as described for "in-line" inspection. Samples are drawn and analyzed at frequent intervals from the packing line. In order to permit time for frequent sample analysis, it may be desirable to analyze samples of 25 or 50 nuts. The average of all samples analyzed shall constitute the grade for the lot when packing and inspection have been completed.

Sampling Packed Lots or Loads. Regardless of whether the lot is (13) in a warehouse, loaded in a conveyance or being loaded or unloaded, a specific rate of sampling should be used. Samples shall be taken from containers in widely scattered locations throughout the lot being inspected.

Sampling Bulk Containers. The following table shall be used as a (14) guide in determining the number of containers to be sampled. This applies only to bulk containers.

Pounds in Lot	Containers Sampled (Minimum)
Less than 20,000	20 (all if less than 20)
20,000 to 80,000	40
More than 80,000	60

Quantity Taken for Sample. When sampling from bulk containers, (15) take approximately 50 nuts from each container opened in lots containing less than 20,000 pounds. In lots containing 20,000 pounds or more, take approximately 25 nuts from each container opened. Use a can, scoop or small bucket of desired size or marked so as to contain approximately 25 or 50 nuts, thus avoiding the need for counting the nuts as each container is sampled. Draw a sample from the central portion of some containers, bottom portion of some and from the top portion of others. In order to obtain a sample from the bottom portion

of a large container, it may be necessary to dump the entire contents into an empty container making the bottom readily accessible.

(16) Replace the nuts taken from each container sampled with an equal quantity taken from one container selected for that purpose. Thus, when sampling is completed, all containers except one or possibly two will be filled with the same amount as before sampling.

(17) Sampling Consumer Packages. When consumer packages in master containers are being sampled, remove entire packages for the sample. The following shall be followed:

(18) Carlot or Truck Load. Select master containers at random at the rate of 1 out of 25. Take 1 consumer package out of each master container selected.

(19) Less than Carlot. Regardless of size of lot, select 20 master containers at random when consumer packages are 1 pound units or less; select 15 master containers when consumer packages are 2 pound units. Take 1 consumer package out of each master container selected. When lots contain 20 or less master containers with one-pound units or 15 or less master containers with two-pound units, a consumer package shall be taken from each master container in the lot.

Replace the consumer packages drawn from the master containers with other packages taken from a container selected for this purpose. Thus, all but a few containers will have their full complement of packages when sampling is completed. (20)

Return Excess Sample. After the check sample has been set aside, all nuts in excess of those cracked for inspection shall be returned to the applicant immediately after the grading has been completed. (21)

Sampling Mixed Quality Lots. When a lot contains two or more sub-lots of different grades or different size classifications in containers which can be distinguished by different markings, shapes or colors, each sub-lot shall be sampled separately, graded separately and reported separately. (22)

Draw Your Own Sample. The sample must be drawn by the inspector, or by another person whom he directs and watches as the sample is being drawn. Never issue an inspection report or a certificate covering a lot of walnuts on the basis of an analysis of a sample submitted by someone other than an inspector and said to be representative of a certain lot. (23)

ANALYSIS OF SAMPLE

Composite Sample. The standards provide for grade determination (24)

on the basis of a composite sample of the lot. No attempt should be made to analyze samples from individual containers. The nuts from all containers sampled are mixed together to form the entire sample representing the lot. In the case of consumer packages the contents of all packages drawn are mixed together. Place the nuts gently into a cardboard carton; avoid causing any breakage or splitting. Then gently pour the nuts into another carton. Pour the nuts from one carton to another two or three times to mix them thoroughly.

(25) Figuring Percentages. The standards for in-shell walnuts provide that percentages shall be determined on the basis of count. Consequently, the inspector should work with analysis samples of 100 nuts or multiples of 100, as shown in the following paragraph. This permits easy and more accurate determination of percentages. When samples of 200, 300 or more nuts are analyzed and the percentage of undersize or defects does not come out as a whole number, report the percentage as the nearest whole number breaking on the one-half percent. Example: 5.4 should be reported as 5%, 5.5 reported as 6%.

(26) Counting Sample. The sample to be graded should be placed in a tray containing 100 shallow cell-type compartments. The tray facilitates rapid and accurate counting of an even 100 nuts. If two or three hundred nuts are to be graded, each hundred should be graded

and recorded separately. Finally the scores for the two or more hundred should be averaged to obtain the grade for the sample.

Use of Tray or Board. Use of a tray or board having 100 (27)
compartments or holes in a 10x10 arrangement is very helpful in making counts when grading the sample. By filling the spaces on the whole tray or one-half of the tray, we automatically have 100 nuts or 50 nuts to examine, and we don't have to actually count them. The tray also makes it possible to line up and easily count the defects, and separate kernel color after cracking.

Judging General Appearance. In addition to the requirements for (28)
the size and quality of individual nuts, there are requirements for the general appearance of the lot. Observe the sample as a whole to judge it for cleanness, brightness and dryness before taking portions of the sample for grading the individual nuts. For details, see par. 42.

Size of Sample Analyzed. The composite sample taken following (29)
the procedure outlined above should be several times as large as the amount required for grading. It should be thoroughly mixed, either by a mechanical mixer or by hand stirring and pouring from one container to another. From the composite sample, the following number of

nuts should be used in determining the percentage of off-size and external and internal defects:

Pounds in Lot	Sample Graded
Up to 15,000	100 nuts
15,001 to 30,000	200 nuts
30,001 to 60,000	300 nuts
60,001 to 80,000	400 nuts

Remember, the above indicates the minimum number of nuts to be graded in each instance, but an additional 100 or 200 nuts may have to be graded in borderline cases.

(30) Measuring Size. Before cracking, the nuts shall be graded for size. Use a sizer with round holes of the diameter prescribed in the standards for the size classification applied to the lot. If the nut passes through the minimum size opening in any position, it should be classed as under that size. If the nut cannot pass through the maximum size opening (if maximum size is specified), it shall be classed as oversize.

(31) Sizing Eureka Walnuts. The standards provide a minimum size for the "large" classification of 77/64 inches, except for Eureka variety for which the "large" size minimum is 76/64. The Inspection Service

has no legal authority to certify variety, and most of our inspectors are not able to positively identify varieties of walnuts. If requested to inspect a lot on the basis of "large" size, use the 77/64 inches sizer, unless the Eureka variety is specified by markings or otherwise, in which case use the 76/64 inches sizer. If the lot is specified as "mixed" and containing some Eurekas, use the 77/64 sizer and make no attempt to separate the varieties. When the 76/64 inches sizer is used, be sure to show on the certificate under the size heading, the percentage under 76/64 inches in diameter.

Under the "Product" heading, make no mention of Eureka unless it (32)
can be quoted from marks on the container. If requested to determine size on the basis of Eureka 76/64 inches, this fact should be reported under "Remarks".
Example: "Size on 76/64 inches minimum at applicant's request".

External Grading. The nuts must be graded for external appearance (33)
and defects before they are cracked for kernel inspection. They first are judged collectively for general appearance on the basis of cleanness and brightness. Each nut is then examined individually to determine whether it has any shell defects, and it is graded accordingly.

(34) It is possible that a walnut may be both off-size and also have a grade defect of the shell. In that case, it should be scored in each category. Probably in most cases, more samples will be needed to give a conclusive answer on either size or shell quality. Therefore, continue checking 50 or 100-nut samples for the other factor until a conclusive answer is reached on both size and defective shells.

(35) Internal Grading. After the size and external quality have been determined, the same nuts shall be graded for kernel quality. This is done independently of the external grading. Kernel quality factors are discussed in paragraphs 49 to 63.

(36) Crack a 100-nut sample, being careful to avoid unnecessary breaking of the kernels. The entire kernel must be removed from the shell to insure accurate grading. As the nuts are cracked and the kernels placed on the board, it will save time and possibly insure greater accuracy if they are arranged in order in certain rows, depending upon their skin color and the presence of grade defects.

(37) Kernel Skin Color. Those kernels which are free from grade defects should be arranged approximately in a pattern of descending color, starting with the darkest in the 2nd or 3rd row from the bottom. The bottom rows are used for kernels with grade defects. Some rearranging

of kernels on the basis of color will be required, but after this is done, it will be fairly easy to count the number which are in the "light", "light amber" and "amber" classifications. (See pars. 60 to 62).

Grading Kernels. Place the defective kernels in the lowest row. It will speed up scoring if the damaged kernels and those seriously damaged are started at opposite ends of the row. (See pars, 41 to 62). (38)

Crack a 100-nut sample and grade the kernels for both skin color and defects. Record on the notesheet the number of "light" and "light amber" kernels and the number of defects of each category. Continue to crack samples and record the results on the notesheet until you have cracked a sufficient amount of nuts to be representative of the lot. (See par. 29). (39)

GRADE FACTORS AND DEFECTS

The factors of quality to be determined when grading the sample are listed below, and each is discussed individually. They fall into three groups: (40)

1. External (shell) quality factors:
   Dryness
   Cleanness-Brightness
   Splits
   Discolored Shells
   Broken Shells
   Perforated Shells
   Adhering Hulls

2. Internal (kernel) quality factors:
   Dryness
   Decay
   Dark skin discoloration
   Rancidity
   Insects
   Mold
   Shriveling

3. Color of kernels.

External (Shell) Defects.

(41) Dryness. The grades require walnut shells to be dry. Wet shells will rarely be a factor in an inspection. Ignore any superficial dampness of the shell such as shells not being completely dried following bleaching, or condensation of moisture on shells coming out of cold storage. Only when the shell is decidedly wet should it be scored. If the kernel is wet, it will be scorable as an internal defect when the nut is cracked.

(42) Cleanness and Brightness. These factors are to be applied to the lot as a whole when the sample is being examined for external defects. All three grades have requirements for cleanness, but only U. S. No. 1 is required to be bright. U. S. No. 1 and U. S. No. 2 grades are required to be practically clean, and U. S. No. 3 grade must be fairly clean.

These terms are defined in the standards. Brightness should be judged for the lot as a whole, rather than on an individual nut basis. Individual nuts should not be scored as defective, but the appearance of the lot as a whole should be classed as damaged if it has a dull, unattractive appearance. Cleanness, on the other hand, should be judged both on the basis of appearance of the lot as a whole and that of the individual nut. If the individual nut is dirty enough, according to the definitions in the standards, it shall be scored as damaged.

Splits are classed as defects of all grades. A split is defined as a walnut with shell halves completely separated at the suture and held together only by the kernel. If the shell halves are attached to each other at any point on the suture, the nut is not considered a split. There is a separate 10% tolerance for splits in each grade, in addition to the tolerance for other shell defects. (43)

Discoloration usually occurs as a brown, reddish brown or gray stain of the individual nut shell that contrasts with the majority of the shells in the lot. This term applies to staining of part or all of the individual shell rather than to a lack of uniformity of color of the lot. The standards define injury, damage and serious damage by discoloration, the terms which apply to U. S. No. 1, U. S. No. 2 and U. S. No. 3 grades, respectively. (44)

(45) Broken Shells are defined as those from which a portion of the shell greater that the area of a circle 1/4 inch in diameter is missing, or the halves are completely broken apart and separated. Lesser amounts of missing shell should be disregarded. When a number of separated half-shells are found in a sample, two half-shells should be scored as one nut or one defect.

(46) Perforated Shells. The U. S. No. 1 and U. S. No. 2 grades require walnuts to be free from damage by perforated shells (areas 1/4 inch in diameter) and the U. S. No. 3 grade free from serious damage (areas 3/8 inch in diameter) Refer to the standards for complete definitions of these terms.

(47) Adhering Hulls. The U. S. No. 1 and U. S. No. 2 grades require walnuts to be free from damage by adhering hulls (over 5% of the shell surface) and U. S. No. 3 grade free from serious damage (over 1/8 or 12-1/2% of the surface). Refer to the standards.

(48) The adhering hull material left on the shell after processing is usually light brown to black in color and is fibrous and tough. In grading the nut, the inspector should be guided by the area which is affected in appearance rather than only the area actually covered by the hull. Thus, if there were a number of strands or particles of hull attached to the shell with very small areas of shell showing between them, the appearance of the whole area may be affected and counted just as though the entire area was covered by hull.

Internal (Kernel) Defects.

Well Dried. A normal, well dried kernel is crisp, brittle and (49)
breaks under pressure or bending. Kernels that are rubbery and do not break crisply and easily (due to moisture content) should be scored as damage because they are not "well dried." Kernels that are very "green" and wet should be scored as serious damage.

Decay may occur as a dry powdery rot or a wet rot. Both are often (50)
accompanied by mold growth. Decay must be scored as serious damage.

Dark Discoloration means that the color of the skin on the kernel (51)
is darker than "amber" as shown on the color chart. When 1/5 or more of the kernel shows dark discoloration, it should be scored as damaged; lesser areas may be disregarded.

Rancidity is usually associated with age, but it may also be (52)
found in freshly harvested walnuts. Alertness on the part of the inspector is often required to detect this defect, because rancid kernels may appear to be sound on casual examination. Rancid kernels usually are somewhat darker colored than the average kernels and may have an oily appearance. However, dark and oily appearing kernels are not necessarily rancid. When in doubt, the unmistakable rancid flavor will be the deciding factor of rancidity. All rancid nuts must be scored as seriously damaged. Caution: Do not mistake a slightly stale flavor of the meat or the slight bitter flavor of the skin for rancidity.

(53) Insect Injury must be scored as a defect regardless of the degree. The presence of any type of dead insect within the shell, or web or frass adhering to the kernel is sufficient cause to score the nut against grade. Likewise, if the kernel is noticeably affected by insect feeding, it should be scored. All insect damage is considered as seriously affecting the edible quality of the nut, and it must be scored against the restricted 5% tolerance provided for each of the three grades.

(54) Live Insects are excluded from all of the in-shell grades, and there are no tolerances for them. If any live insects are found, the lot must be reported as failing to meet the U. S. grade, regardless of how good the quality of the lot may be in other respects.

(55) Mold. If there is doubt that the kernel actually is moldy, it is permissible to use a magnifying glass to help in deciding whether mold is present. In determining whether inconspicuous white or gray mold affects more than one-eighth of the total surface of the kernel, or more than one square centimeter (whichever is the lesser area), include only those areas noticeable without magnification. Both sides of each half shall be included in the surface area of the entire kernel. Mold which is conspicuous because it is thick or colored or black is classed as damaged, even though it may be present on a very small portion of the surface. Kernels damaged by mold are scored against the restricted tolerance along with serious defects.

Shriveling is probably the most common defect of walnuts. The (56)
standards include detailed definitions of damage and serious damage by shriveling. Care should be taken not to confuse "lean" kernels with those that are actually shriveled. It is typical of some crops to have kernels which are thin in cross section. The term "shriveling" implies that the kernel has shrunk sufficiently from the maximum size attained at a previous time in its growing period so that the pellicle (skin) is noticeably wrinkled and/or part of the kernel tissue has dried out and become hard. Scoring of shriveling is based on the outer or curved surface of the half kernel. However, examination of the underside, or "flat" surface will assist in determining whether the kernel is shriveled or only lean.

The following summarizes the maximum shriveling permitted before (57)
scoring as damage or serious damage:

Damage. 5% of the surface of the entire kernel (both halves) may be severely shriveled before the kernel is classed as damaged.

This may occur either on one or both halves of the kernel, in any combination as, for example, 5% - 5%, 3% - 7%, 0 - 10%, all of which average 5% for the entire kernel.

Serious Damage

(a) When affecting both halves of the kernel: One-eighth (12-1/2%) of the surface of entire kernel may be severely shriveled before the kernel is classed as serious damage. This may occur on both halves in any combination as, for example, 10-15%, 5-20%, 12-1/2%-12-1/2%, all of which average one-eighth or 12-1/2% of the entire kernel

(b) When affecting one half-kernel and there is no shriveling of any degree on the other half kernel 50% of the affected half-kernel may be severely shriveled before it is scored as serious damage.

(58) Greater areas of surface may be affected by lesser degrees of shriveling which do not affect the appearance of the kernel or half-kernel to a greater extent than the areas of severe shriveling permitted. This applies to both the definition of damage and that of serious damage.

(59) Do not consider skin color in classifying kernels on the basis of shriveling. It is natural for shriveled kernels to have darker skin color than the average for the lot, and this may detract from their appearance to some extent in addition to the shriveling. However, the two factors shall be judged separately. Decide first whether to score

the kernel for shriveling without being influenced by skin color. If the kernel is not scored for shriveling, place it in the appropriate place for color without regard to the shriveling.

Color of Kernels.

Use of Color Chart. The color classification of a kernel can be determined by comparing it with the color chart. The inspector should have a color chart available for frequent comparison when classifying walnut kernels. Do not allow the chart to become dirty, because that may cause the colors to appear darker. (60)

Percentage of "Light Amber" and "Light". The U. S. No. 1 grade requires at least 70%, by count, of the walnuts to have kernels not darker than "light amber", and which are free from grade defects; included in this 70% at least 40% of the nuts must have kernels not darker than "light". Higher percentages than required in the grade of "light amber" and/or "light" kernels may be specified in connection with the U. S. No. 1 grade. The U. S. No. 2 grade requires at least 60%, by count, of the walnuts to have kernels not darker than "light amber", and which are free from grade defects. Higher percentages than required in the grade of "light amber" and/or "light" kernels may be specified in connection with the U. S. No. 2 grade. The U. S. No. 3 grade has no kernel color requirement. However, the percentage of nuts (61)

with kernels not darker than "light amber" and/or "light" may be specified in connection with the U. S. No. 3 grade.

(62) In determining the percentage of "light amber" or "light" colored kernels in a sample, only those kernels free from grade defects may be included. For example, a light colored kernel damaged by mold or shriveling must not be counted in determining the percentage of "light" kernels.

APPLICATION OF TOLERANCES

(63) Car-Truck Lots. The application of tolerances in the "U. S. Standards for Walnuts in the Shell" makes no provision for limiting the percentages of defective nuts in the individual container. This is because the standards are intended to be applied to a composite sample from the lot as a whole. However, any container or group of containers, in which the walnuts are obviously of a quality materially different from that in the majority of containers in the lot, are to be considered a separate lot and shall be sampled and graded separately. (See Par. 22).

"In-line" Inspection. Where an "in-line" inspection sample is analyzed every 20 or 30 minutes, an individual sample may exceed the defects tolerance by a small margin, but it may not differ in appearance from "within-grade" samples from the same line. Such a sample can usually be averaged with the others without causing the run to go out of grade. As a general working rule, "in-line" inspection samples that contain not more than 1-1/2 times the total tolerance for defects may be averaged with other samples. When an "in-line" sample is found to exceed 1-1/2 times the tolerance, the containers covered by the sample should be considered a separate lot and reported separately as failing to meet the grade. In such cases, the packer will probably want to set aside a group of containers represented by the "high defect" sample so that they can be re-marked or regarded. (See Par. 6) (64)

TABULATED DEFECTS AND TOLERANCES

In order to help in the application of the standards, Table I shows the classification of the various kernel defects, and Table II shows the tolerances provided by the standards for the various grade factors. Also a suggested form for the inspector's note sheet is provided. (page 31) (65)

IN SHELL WALNUTS

TABLE I
CLASSIFICATION OF KERNEL DEFECTS

Type of Defect	Damage	Serious Damage
Not well dried	Pliable or leathery	Wet, rubbery and "green"
Skin discolored	20% or more of surface darker than "Amber".	--------
Insect	Dead or live insect or insect fragment, web or frass is present inside shell; or kernel shows distinct evidence of insect feeding.	---------
Rancid	----------	Rancid flavor
Mold	Any conspicuous mold; or inconspicuous mold affecting aggregate area larger than one square centimeter or one-eighth of entire surface of kernel.	----------
Shriveling	More than 5% of surface severely shriveled or equivalent.	More than 1/8 of surface severely shriveled or equivalent.
Decay	----------	Any decay

TABLE II
TOLERANCES FOR GRADE DEFECTS

Grade	External (Shell) Defects	Internal (Kernel) Defects	Color of Kernels
U. S. No. 1	10% for splits. 5% for other defects including not over 3% serious damage.	10% total, including not more than 6% damage by mold, insect or serious damage by other means, but not over 5/6 of this amount or 5% insect damage. No live insects.	No tolerances to reduce required 70% "light amber" or 40% "light" or any larger percentage of either specified.
U. S. No. 2	10% for splits. 10% for other defects including not over 5% serious damage by adhering hulls.	20% total, including not more than 10% damaged by mold, insect or serious damage by other means, but not over 1/2 of this amount or 5% insect damage. No live insects.	No tolerance to reduce required 60% "light amber" or any other percentage of "light amber" or "light" specified.
U. S. No. 3	Same as U. S. No. 2	Same as U. S. No. 2	No tolerance to reduce any specified percentage.

THE CERTIFICATE

Depending upon circumstances, either the handwritten or type- (66)
written certificate may be used. General instructions for filling in the necessary information at the top of the certificate are given in the General Handbook. The following paragraphs deal with reporting information after other certificate headings.

PRODUCT INSPECTED

Under this heading, the certificate should report the commodity, (67)
type of container, identifying marks and number of containers in the lot as outlined in the following paragraphs:

The Commodity. Unless certification of variety is specifically (68)
requested and the inspector is positive he can identify the variety, he shall not certify the name of the variety. As a general rule, use one of these statements: "Walnuts in the Shell" or "In-Shell Walnuts in sacks branded Eureka-----."

Type of Container. Walnuts in the shell usually are marketed in (69)
burlap sacks, consumer size film bags or in cartons. In processing plants and warehouses, walnuts are often stored and handled in bulk bins. The size and type of the container should be indicated on the certificate.

(70) Identifying Marks to be quoted from the containers are: the brands, the grade (if indicated), the variety, packer's names and any stenciled code or port marks present.

(71) The Number of Containers covered by the inspection at shipping point must always be stated. This will generally be stated as an applicant's count or manifest, unless the inspector has actually counted the containers. In the case of a restricted inspection on a load at destination, the count may not be readily available.

(72) Loading and Pack. Refer to instructions in the General Handbook.

SIZE

(73) The inspector shall give a brief statement describing size measurements in order to support the reference to size under the "Grade" heading. The size classifications and tolerances are as follows:

(74) Mammoth ------- 96/64 (1-1/2) inches in diameter or larger. (12% for undersize)

(75) Jumbo ---------- 80/64 (1-1/4) inches in diameter or larger. (12% for undersize)

(76) Large -------- 77/64 inches in diameter or larger. (Eureka 76/64) (12% for undersize)

(77) Medium -------- 73/64 to 77/64. (12% for oversize and 12% for undersize)

Standard --- 73/64 inches in diameter or larger. (12% for undersize) (78)

Baby --- 60/64 to 74/64. (12% for oversize and 10% for undersize) (79)

Minimum diameter or minimum and maximum diameter may be used to describe size instead of one of the classifications if this method is specified by the applicant. (12% for oversize and 12% for undersize) (80)

Example: (Large size lot) Generally 77/64 inches and larger in diameter. 3% under 77/64. (81)
(Baby size lot) Mostly 60/64 to 74/64 inches in diameter. 8% under 60/64 and 4% over 74/64.

QUALITY

Under this heading, describe the general appearance of the lot and report the percentages of external and internal defects and kernel color. (82)

Example 1: Shells are dry, clean and bright. 5% splits and 2% damaged by other shell defects, broken shells. Kernels well dried. 70% or more of kernels not darker than light amber including 40% or more not darker than light color. Internal defects 14% consisting of 8% damage including 3% serious damage

by shriveling, 2% damage by mold, 1% insect damage and 3% damage by dark discoloration.

Grade: Fails to grade U. S. No. 1 account of internal grade defects. Contains 86% U. S. No. 1 kernel quality.

Example 2:

Shells are dry, practically clean and fairly bright. 6% splits and 4% other shell defects consisting of 3% damage including 2% serious damage by broken shells and 1% damage by discoloration. Kernels well dried. 62% of kernels light amber or lighter in color. Internal defects 18% consisting of 12% damage including 2% serious damage by shriveling, 4% damage by mold and 2% insect damage.

Grade: U. S. No. 2.

GRADE

(83) The standards require that size shall be specified in connection with the grade. Regardless of the grade statement, there should always be some statement describing size. If the applicant so specifies, the terms used should be on the basis of diameters rather than the named classifications.

Examples: "U. S. No. 1, Large." (84)

"U. S. No. 2, Baby size."

"U. S. No. 1, 76/64 inches minimum."

Percentage of U. S. No. 1 Kernel Quality. If a lot fails to meet (85) U. S. No. 1 grade, and the applicant requests certification of the percentage of U. S. No. 1 quality, it shall be assumed that he wants to know the percentage of kernels free from grade defects. The lot may fail to grade U. S. No. 1 because of shell defects, kernel defects or kernel color or because of any two or all three of these requirements. Determine the percentage of U. S. No. 1 kernel quality by subtracting from 100 the percentage of kernels scored as grade defects. In such cases, do not apply the requirements for light amber and light kernel color.

Following the customary grade statement, make an added statement (86) showing the percentage of U. S. No. 1 kernel quality.

Example: "Lot contains 84% U. S. No. 1 kernel quality."

The external quality is described under "Quality" in terms of (87) general appearance and percentage of shell defects, and this provides information for anyone concerned. Likewise, the percentages of "light amber" and "light" kernels are reported under "Quality", they shall not be used in figuring the percentage of internal U. S. No. 1 quality.

It is possible that a lot might fail to grade U. S. No. 1 because of either external quality or insufficient percentage of "light amber" or "light" kernels, but the lot could contain 90% or more U. S. No. 1 kernel quality.

REMARKS

Under this heading should be mentioned restrictions, statements
(88) requested by the applicant and other comments. If all portions of a lot are not accessible for sampling, the certificate must be restricted to that portion of a load or lot from which the sample was taken. A car or truck number given to the inspector by the applicant as the conveyance in which he plans to load the lot, which is being or has just been inspected in the warehouse, must not be shown on the certificate under the "Car Number" heading. Such numbers may be reported under "Remarks".

(89) Examples:

1. "Inspection and certificate restricted to containers in upper 2 layers of load."
2. "Applicant states above lot to be loaded into railroad car PFE 12345."

IN-SHELL WALNUT INSPECTION NOTESHEET

DATE _____ Certificate No. _____

Number in Sample	SIZE		EXTERNAL (Shell) DEFECTS								INTERNAL (Kernel) DEFECTS								SKIN COLOR	
	Over /64	Under /64	Splits	Damage: Broken	Damage: Stain or Perforated	Damage: Adhering Hull	Damage: Total Damage	Serious: Adhering Hull	Serious: Stain or Perforated	Serious: Total Serious	Not Dried	Dark Discoloration	Shrivel Damage	Total Damage	Insect	Serious Shrivel	Mold, Decay Rancid	Total Serious	Light	Light Amber

PART II

SHELLED WALNUTS

GENERAL

(90) An annually increasing portion of the walnut crop is being shelled to supply consumer demand. For obvious reasons, it is the usual practice of handlers to include in shelling stock, lots containing high percentages of kernel defects that cannot be sorted out without cracking and lots which have irregular shell color or numerous defective shells.

(91) In the shelling plants, walnut cracking is done by machines. After the shell is removed, the kernels are screened for size and sorted for color and defects. In larger plants, color sorting of small pieces and particles is done automatically by "electric eyes."

(92) Walnut kernels are generally packed for shipment in cartons, in consumer size cans or in film bags. The most popular small package is the film bag.

SAMPLING

(93) The two types of procedures described in Part I covering walnuts in the shell are also used for shelled walnuts.

"In-line" Inspections. When samples are being selected from the conveyors or open containers at the end of the sorting and packing line, a sample analysis should be selected at least every 30 minutes or every 1,000 pounds, whichever comes first. (94)

Under continuous inspection, with samples being analyzed at 30 minute intervals or more frequently, there may be relatively little variation in quality between consecutive samples. The average of these periodic samples constitutes the grade of the total pack. (95)

Handling Irregular Lots. The application of tolerances does not limit the amount of variation which may exist between various portions of a lot as represented by different samples. However, individual samples containing higher percentages of defects indicate a lower quality pack at that time which, if averaged with the percent of defects of other samples, might bring the entire lot out of grade. Therefore, it has been found desirable to limit any composite sample in an "in-line" inspection to not more than 1-1/2 times the specified tolerances for defects. When a sample is found to contain more than 1-1/2 times the total tolerance for defects, the applicant **** should be notified immediately so that he/she may set aside the containers represented by the sample or change the markings on the containers. (96)

Car, Truck or Lot Inspection. Lots that are already loaded or are to be loaded into a car or truck, or are to be State lot stamped, should be inspected on the basis of composite samples. The sampling procedure for large containers differs slightly from that used for consumer size containers. Both procedures are described in the following paragraphs. (97)

(98) While drawing the sample, the inspector should notice the general appearance of the kernels in each container sampled. If the quality or size of the kernels in any container or number of containers sampled is distinctly different from that in the majority of the containers sampled, and those containers can be distinguished from the others by different marks, the inspector shall keep the samples from those different containers separate and grade them as a separate lot.

(99) Large Containers. The usual container for "bulk" shipments is the cardboard cartons of the 25 or 30 pounds capacity. Select containers at random from all parts of the lot for sampling, depending upon the size of the lot as follows:

Size of Lot	Minimum Number Packages Sampled
Less than 5,000 pounds	10
5,000 up to 10,000 pounds	15
10,001 up to 20,000 pounds	20
20,001 up to 30,000 pounds	30
30,001 up to 40,000 pounds	40
40,001 up to 50,000 pounds	50

For lots over 50,000 pounds, run an additional 10 samples for each increment of 10,000 pounds, or fraction thereof. ****

Before opening the carton to sample, turn it upside-down and shake it gently. This will help to create an even distribution of small particles among the larger portions of kernels. Then turn the carton right-side-up and open the top for sampling. (100)

Use a measuring cup or container of about equal capacity, and remove a cupful of kernels from each container sampled. The samples from all containers are placed together in one container to form the composite sample of the lot. Replace the cupful of kernels taken from each container with an equal amount from another container selected for this purpose. Make note if the cartons are film lined or waxed on the inside. (101)

Small or Consumer Size Packages. These small packages are place-packed in master containers for shipment. Select containers at random from all parts of the lot for sampling. The number of master containers sampled should be determined by the size of the lot as follows: (102)

Containers in Lot	Containers Sampled
Less than 100	10
100 up to 500	15
501 up to 1,000	20
Over 1,000	25

(103) Take a consumer package from the container, alternating between upper layer in some containers and lower layers in others. Plan on using a measuring cupful of kernels from each master container, and draw two or more small packages from each container, if that number is required to fill the cup. Replace the packages removed from the master container with like packages from another container used for this purpose.

(104) Use only one cupful of kernels from each master container combined with the cupfuls from all of the other master containers sampled to make up the composite sample for analysis. Use whatever part of the contents of one or more small packages required to fill the measuring cup. The rest of the contents of these small packages are not used in the sample, and shall be returned in a large container to the applicant.

INSPECTION EQUIPMENT

(105) The items needed for inspection are as follows:

Sampling cup. Standard 8 ounce metal cup or can of equal size.

Sample divider. The standard shelled peanut divider or one of similar design. If the divider is not available, mixing and dividing must be done by hand.

Scales. Sensitive gram scales weighing to 1/10 gram.

(one gram scale will suffice if 1/10 gram scale not available)

Sieves or screens with round openings of specified sizes.

Note Sheets especially designed for shelled walnut inspection.

ANALYSIS OF SAMPLE

MIXING AND DIVIDING

Sample Divider. Empty the entire composite sample into the hopper, and divide the sample. Divide one of the halves of the sample, if necessary, by running it through the divider to reduce it to approximately the quantity needed for analysis. A third cut through the divider may be made if it is necessary to further reduce the size of the sample. From the balance of the sample, set aside a check sample greater in volume than the amount used for analysis. (106)

Hand Dividing. If a mechanical divider is not available, mix the sample by pouring it gently from one box to another several times. Gentle handling will help to avoid breaking kernels. Next, spread the entire sample in a thin layer on a smooth, clean table or counter. Be careful to get large and small portions of kernels fairly uniformly distributed. Use a ruler or something similar to make two intersecting channels in the mass, cutting it into 4 approximately equal quarters. Sweep the kernels from one of the quarters into the scales scoop for (107)

weighing, and if additional kernels are needed to complete the analysis samples, obtain them from the diagonally opposite quarter. Save a check sample of adequate size from one or both of the remaining quarters.

WEIGHING ANALYSIS SAMPLE.

Size of Sample. If the sample has been carefully drawn as
(108) directed and properly mixed, it should be highly representative of the lot. Only a portion of it need be analyzed to determine the grade. Depending upon the size classification of the kernels in the sample to be graded, the quantity analyzed shall be an even weighted amount not less than the following:

Size Classification of Kernels	Quantity for Analysis
Halves	2,000 grams
Pieces & Halves	1,000 "
Pieces	500 "
Small Pieces	300 "

Weighing. When the dividing procedure has reduced the sample size
(109) to approximately the amount to be used for analysis, the walnuts are placed in the scales scoop and weighed. If too much is on the scoop, scrape off some with the fingers from the end of the scoop so as to remove both large and small size material in the right proportions.

If more is needed on the scoop to make the desired weight, add some from another portion of the sample, pouring them from the divider pan or brushing them off the table. Be sure that the weight is exactly the amount needed as shown in the table above.

SCREENING AND SIZING.

Screening. The sample should be sieved before any sorting is done, (110) so that none of the small particles and dust will be lost. Have only enough kernels on the sieve at one time to barely cover it, even though several screenings will be necessary with large samples. Shake the sieve moderatley from side to side for 10 to 15 seconds or until nothing more will pass through the openings. Do not use pressure to force the pieces of kernel through the sieve.

It is easier to screen over the larger opening sieve first, thus (111) eliminating the larger portions of kernels and reducing the amount to be tried over the smaller opening sieve. In every case, either two or three sieves will be used, as indicated by the following:

"Halves" classification requires 8/64 and 16/64 round-hole sieves.

"Pieces & Halves" classification requires 8/64 and 16/64 and 24/64 sieves.

"Small Pieces" classification requires 8/64 and 24/64 sieves.

After falling through the larger opening screen, those kernels which fell through are screened over the smaller opening sieve. If three sieves are required, the smallest opening sieve should be used last.

(112) Sorting Sizes When grading a sample from a lot intended to be either "Halves" or "Pieces and Halves" size classification, it is necessary to sort out the halves and the three-fourths halves. The requirements for these two size classifications are discussed in the following paragraphs, along with requirements for the two smaller size classifications.

(113) Bear in mind that, regardless of the size of kernels in the sample, or the gradations of sizes or undersize or oversize being determined, the weighing shall not be made until after the shell and foreign material have been removed. On the other hand, all size determinations shall be made before the defects have been sorted out. (Para. 110)

(114) Halves. This classification requires that 85%, by weight, of the kernels in a lot may not have more than 1/8 of the half-kernel broken off. The remaining 15% of the kernels may be "3/4 halves" with not more than 1/4 of the half-kernel broken off. A tolerance of 5% for pieces smaller than 3/4 halves is provided, and includes a 1% tolerance for pieces smaller than 1/4 inch in diameter.

Pieces and Halves. This classification requires that at least 20% of a lot, by weight, consist of half-kernels (halves with not more than 1/8 broken off). The remainder of the lot may consist of three-fourths halves or pieces that will not pass through a sieve with 24/64 inch (3/8 inch) round holes. If the lot is found to contain more than 20% half-kernels, this fact may be stated in connection with the grade, thus: "U. S. No. 1 Light, Pieces and Halves with 40% Halves." (115)

A tolerance of 18%, by weight, is provided for pieces that will pass through the 24/64 inch (3/8 inch) screen. Included in this 18% tolerance is a 3% tolerance for pieces that will pass through a 16/64 inch (1/4 inch) screen, and included in this 3% tolerance is a 1% tolerance for particles that will pass through an 8/64 inch (1/8 inch) screen. These tolerances may not be used to reduce the percentage of halves required. (116)

Pieces. This is the classification applied to a lot containing less than 20% halves and consisting of portions of kernels that cannot pass through a sieve with 24/64 inch (3/8 inch round openings. (117)

A tolerance of 25%, by weight, is provided for pieces that will pass through a 24/64 inch sieve. This 25% tolerance includes a 5% tolerance for pieces that will pass through a 16/64 sieve, which in turn includes a 1% tolerance for particles that will pass through a 8/64 sieve. (118)

(119) Small Pieces. This classification is applied to a lot consisting of portions of kernels that are small enough to pass through a sieve with 24/64 inch (3/8 inch) round openings but will not pass through a sieve with 8/64 inch (1/8 inch) round openings.

(120) A tolerance of 10%, by weight, is provided for oversize pieces and 2% for undersize pieces. Smaller maximum and larger minimum sizes may be specified within this 24/64 to 8/64 inch range, and if this is done the same tolerances apply.

(121) The walnut industry frequently packs lots containing pieces that will pass through an 8/64 sieve; for example, pieces down to 6/64 inch size. These are known in the trade as "pills," "particles," "nuggets," etc. As there is no provision in the standards for such lots, they may not be certified as meeting any U. S. grade or size. However, they may be certified as meeting special specifications, such as marketing order specifications, thus: "Meets requirements Marketing Order No. 84".

SORTING FOR COLOR.

(122) After the various separations of different sized kernels have been weighed and recorded, the kernels of all sizes shall be sorted for color and defects. This can be done in one sorting operation. Kernels darker than the lower limit of color required for the classification which the lot is intended to meet shall be scored against the tolerance for color.

Using the appropriate colors on the grading chart as guides, the kernels are sorted by color and the entire sample classified according to the provisions of the standards as follows: (123)

"Extra Light" permits 15% of kernels "Light" or darker, including not over 2% darker than "Light". (124)

"Light" permits 15% of kernels "Light Amber" or darker, including not over 2% darker than "Light Amber". (125)

"Light Amber" permits 15% of kernels "Amber" or darker, including not over 2% darker than "Amber". (126)

"Amber" permits 10% darker than "Amber". (127)

"Off Color" is not a color classification, but is a term that may be applied to lots which contain in excess of 10% of kernels that are darker than "Amber". (128)

Unlike the Walnuts in the Shell Standards, kernels darker than "Amber" in the Shelled Walnut Standards are not scored against the 5% or 8% tolerance for grade defects, but are scored against the separate 2% or 10% tolerance for darker than "Amber" provided in the Color Classification. (129)

Classifying for Color. When the kernel and the picture are very nearly the same shade, it is difficult to decide which is lighter, even if the kernel is fairly uniformly colored. Many kernels show variations, mottlings or markings of color which make the decisions more difficult. The following guidelines are intended to help in making the separations. (130)

(131) Judge Entire Surface. Take into consideration the color of the entire surface of the kernel, regardless of the size of the portion. Consider the average color, making allowances for slightly darker areas compensated for by lighter areas. Disregard shadows in the valleys which may cause a darker appearance.

(132) Natural Color Markings. Color markings are natural to some varieties of walnut kernels. Reasonable allowances should be made for these markings when grading kernels for color, and rules of interpretation have been established as follows:

(133) A. Darker Areas at Point of Attachment. Many kernels show darker areas of skin at and near the point where the two halves were formerly joined. Usually the darker color on the inner side of the kernel is limited to the depressed area around the point of attachment. When this darker color is limited to the sprout end or the depressed area near the point of attachment, or both, the kernel should be classed according to the following:

(134) (1) If the color on those certain portions of the kernel is no darker than one classification below the color of the rest of the surface, the kernel shall be classed as the color of the rest of the surface. For example: when a kernel generally qualifies as "light" has some "light amber" coloring confined to limited areas near the point of attachment as described above, it should be classed as "light."

(2) If the color on those certain portions of the kernel is two classifications darker than the color of the rest of the surface, the kernel shall be placed in the next lower color classification. For example: when a kernel generally qualifies as "light" but it has some "amber" coloring confined to limited areas near the point of attachment, as described above, it should be classed as "light amber". (135)

(3) If the color of those certain portions of the kernel is three classifications darker than the color of the rest of the surface, the kernel shall be placed in the second lower color classification. For example: when a kernel generally qualifies as "light" but it has some darker than amber coloring confined to limited areas near the point of attachment as described above, it shall be classed as "amber". (136)

(4) The interpretations in paragraphs 1, 2, and 3 are qualified with respect to pieces consisting of less than a half-kernel. If the darker areas of skin at or near the point of attachment constitute more than one-fifth of the surface area of the piece, it shall be placed in the classification corresponding to the darker areas. For example: when a piece of kernel which is mostly "light" colored has more than 20% of its surface area "amber" colored, the piece shall be classed as "amber" even though the darker color is confined to the limited area near the point of attachment, as described above. (137)

(138) B. Darker Areas on Skin. In grading kernels for color, when darker colors appear at points other than those of attachment, the overall color effect should be used as the basis of deciding whether the kernel shall be put in one or the other classification. This applies when some areas are only slightly darker than others. When areas are distinctly darker than the rest of the kernel, producing the effect of dark spots which are not located at the point of attachment, the following table should be applied:

Color of Most of the Area of the Skin	Area of "Light Amber" Color	Area of "Amber" Color	Classify Kernel as Shown Below
"Light"	1 - 10%	1 - 5%	"Light"
"Light"	11% or more	6 - 15%	"Light Amber"
"Light"		16% or more	"Amber"
"Light Amber"		1 - 15%	"Light Amber"
"Light Amber"		16% or more	"Amber"

(139) (1) Characteristic Veining or Speckling. Veining or speckling of the skin is typical of certain varieties of walnuts. Frequently such markings are not objectionable. They shall be permitted on a kernel in a certain color classification to the extent that they do not materially affect the appearance or darken the overall color

below the bottom of the color classification in question. Kernels bearing veining or speckling, which is so dark or concentrated as to materially affect the appearance of the kernel or lower its overall color into the next darker classification, shall be classified in the color group next below that in which they would fall if the markings were not present.

(2) Dark Knobs. Another form of marking characteristic of some varieties is dark knobs. This applies to darker color on the raised knobs or humps on the outer surface of the kernel. The same principle shall be applied in classifying such kernels as is applied in classifying kernels with darker areas or with veining or speckling. (140)

C. Peeled, Bare or Worn Spots. Bare spots where the skin (pellicle) is missing from walnut kernels are common. They are not classed as defects, although they affect the appearance and shipping quality to some extent. In most cases, the exposed flesh of the walnut is in the "extra light" color classification, but the kernel shall be judged for color only on the basis of the remaining skin. (141)

If part of the kernel has been worn away by rubbing in the machinery or in some other way, this fact shall be taken into consideration in deciding whether it is a half-kernel, 3/4 half-kernel or less. For example: a half-kernel which apparently has more than 1/8 but not more than 1/4 of its volume rubbed or scraped off, is considered a 3/4 half-kernel. (142)

SORTING FOR DEFECTS.

(143) The defective portions of kernels may be picked out at the same time the sample is being analyzed for color. Each portion of kernel shall be examined individually as the sample is sorted. The various defects are discussed individually below.

(144) Shell and Foreign Material. Pieces of shell or center wall (the woody partition between the halves of the kernel) and foreign material constitute one of the most objectionable types of defects. They are classed as very serious defects, and are subject to a tolerance of only .05%. The shell and foreign material removed from all portions of the sample shall be weighed together to determine the percentage.

(145) Dryness of the kernel is important to keeping quality. Both grades require that the kernel be "well dried." If it is pliable or leathery, it should be classed as not well dried and scored against grade.

(146) Clean means that the individual kernel and lot as a whole is not materially affected by adhering dirt, dust or other foreign material. Occasionally a kernel has some loose dirt or particles of chaff or meal on the surface. The inspector should blow on this area to remove any material which is not adhering to the surface. If the appearance of the kernel is materially affected by the adhering material remaining, it should be scored as damaged. A few scattered particles of skin adhering to the worn surface of a kernel should not be considered sufficiently objectionable to be scored as damaged.

Decay and Rancidity. Kernels in which the tissue has been broken (147)
down either by dry or wet rot should be scored as decay. Such kernels are rarely found in shelled walnuts. Rancid kernels are found occasionally. They are often darker in color than the average kernel and may have a yellowish-brown or oily appearance. Kernels with flesh discoloration should not be scored as rancid unless they have a rancid taste. This taste should not be confused with a slightly astringent flavor of the pellicle (skin) or with staleness. Decay and rancidity are classed as very serious damage.

(148)

Shriveling. The degree of shriveling on a portion of kernel determines how it should be scored, as follows:

Damage when more than 1/8 (12-1/2%) of the kernel portion is severely shriveled.

Serious Damage when more than 1/4 (25%) of the kernel portion is severely shriveled.

Very Serious Damage when more than 1/2 (50%) of the kernel portion is severely shriveled.

(149)

When greater areas than specified are affected by shriveling that is not severe, score the kernel as damage or serious damage depending on the objectionable appearance. Kernels which are thin in cross section, but otherwise normal, should not be considered damaged.

(150) Mold is scored differently under the shelled walnut grades than under the grades for walnuts in the shell. Score as follows:

Damage includes portions of kernels showing any mold that is plainly visible.

Serious Damage includes portions of kernels showing mold plainly visible on more than 1/8 (12-1/2%) of the surface.

Very Serious Damage includes portions of kernels showing mold plainly visible on more than 1/4 (25%) of the surface.

(151) Discoloration of Meat or Flesh. Exposed flesh of the kernel is subject to discoloration due to release of oil, oxidation, etc. This usually develops slowly over a long period of time, but it may be accelerated by heat, bleaching solution, etc. A light yellowish-brown oily appearance of the flesh is fairly common and should not be considered as damage as long as there is no rancidity. Discoloration which is a bright yellow, orange, brown, medium gray or some equally or more objectionable color, shall be considered as causing damage or serious damage to the kernel, depending on the amount of the kernel affected. When it is determined that the kernel is rancid, it is scored as such, regardless of how slight or severe the degree of flesh discoloration. Score discoloration of the meat without rancidity as follows:

Damage when more than 1/8 of the meat of the kernel portion is severely discolored. A greater volume affected by lesser degree of discoloration producing an equally objectionable appearance shall be scored as damage.

Serious Damage when more than 1/4 of the meat of the kernel portion is severely discolored. A greater volume affected by lesser degrees of discoloration producing an equally objectionable appearance shall be scored as serious damage.

Very Serious Damage when more than 1/2 of the meat of the kernel portion is severely discolored.

Discoloration of the meat is often referred to simply as "discolored." (152)
This term should not be confused with darker than amber color of the kernel skin, nor with shell discoloration which is a factor with in-shell walnuts.

Insect Injury means the insect, web, frass or other evidence of (153)
insects is apparent on the kernel. It is classed as very serious damage. If the effects of insects are visible, the kernel should be scored regardless of the area of the surface affected. Dead insects in the lot which are not attached to any kernel should be classed as foreign material. Live insects which are not attached to any kernel should be reported separately from other defects.

WEIGHING VARIOUS ITEMS.

(154) Following the screening, sizing and sorting procedures, each separate portion of the sample shall be weighed and the weight recorded to the nearest 1/10 gram. The number of weighings required will depend on the size classification and the quality of the lot. Including defects, color and size factors there could be as many as ten. The size separations must be weighed early in the procedure, before the quality and color separations are made. Record the weight of each item, and later determine the percentage. To assist in the classification of defects to be weighed together they have been listed in three groups as follows:

(155) Classification of Defects

Damage or Equivalent to Damage:

Not clean.

Not well dried.

More than 1/8 kernel portion severely shriveled.

Mold plainly visible.

More than 1/8 volume of kernel meat severely discolored.

Serious Damage:

More than 1/4 kernel portion severely shriveled.

Mold plainly visible on more than 1/8 of kernel portion.

More than 1/4 volume of kernel meat severely discolored.

Very Serious Damage:

More than 1/2 of kernel portion severely shriveled.

Mold plainly visible on more than 1/4 of kernel surface.

More than 1/2 volume of kernel meat severely discolored.

Insect injury.

Decay and rancid.

Shell and foreign material. (Weigh separately)

NOTESHEET

Because of the fairly large number of percentages required to determine the grade, color and size classification of the sample, it is necessary to record the weights of each factor. A note sheet prepared especially for this purpose is recommended, and a suggested form is included in these instructions. (page 58) (156)

When the weights and percentages have been recorded on the note sheet, it should be possible to determine what grade, color and size classifications are met. If the results do not give a clear-cut answer and the percentages are borderline, a second portion of the master sample should be analyzed, in order to give the inspector the needed confidence in his report. In such cases, the quantity analyzed should be equal to that analyzed the first time, and the results of the two analyses shall be averaged. Assuming that only one or two of the sets (157)

of factors (size, quality or skin color) is in question, it will be satisfactory to analyze the second portion of the sample for the one or two categories only. This can be handled on the certificate by an added statement under the "Size" or "Quality" heading to show that the size (or defects or skin color) determination was based upon a _____ grams sample.

THE CERTIFICATE

(158) Mention is made here of only those sections of the certificate which may need some explanation because of differences from the customary ways of reporting most fruits and vegetables.

(159) Time. Report both the date and hour when the sample was drawn and the hour when it was analyzed.

(160) Product. Report the type of containers, marks on the containers, especially with reference to size, color and grade, and the applicant's container count.

(161) Pack. Report whether well filled, slightly slack, or slack about 3/4 inch or whatever the case may be. If the cartons are lined with plastic film or are waxed, the fact shall be reported.

(162) Temperature. Usually there will be no need to determine and report temperature unless we are requested to do so.

Size. Report the percentages of halves and of three-quarter halves if the lot is intended for "Halves" classification. If it is intended for "Pieces and Halves," report the percentage of halves. For lots of "Pieces" or "Small Pieces," report the percentages of kernels riding or passing through the prescribed screens. (163)

Examples:

(Halves) "Lot contains 88%, by weight, halves and 9%, by weight, three-quarter halves and less than 1% passing through the 16/64 inch round hole screen." (Pieces and Halves) "Lot contains 28%, by weight, halves, 12% pass through 24/64 inch round hole, including 1.5% pass through 16/64 inch round hole, of which 0.5% pass through 8/64 inch round hole." (Pieces) "18%, by weight, pass through 24/64 inch round hole, including 4% which pass through 16/64 inch round hole, of which 0.5% pass through 8/64 inch round hole." (Small Pieces) "8% of pieces ride 24/64 inch round hole screen. 1.35% pass through 8/64 inch round hole." (164)

Quality. Under this heading, report the quantity of the sample drawn and the exact number of grams used for sample analysis. Also report the weights and percentages of different color classifications, and the weights and percentages of defects. (165)

(166) Example:

Of approximately 4,000 grams sample drawn, 1,000 grams analyzed contained the following:

Color	Grams	Percent
Kernels darker than "light".	87.2	8.75
Including darker than "light amber"	11.2	1.12
Defects		
Damaged kernels	18.4	1.84
Seriously damaged	5.0	.50
Very seriously damaged	2.0	.20
Shell & center wall	.1	.01
Total defects	25.5	2.55

(167) Grade. The grade statement should describe the lot in terms of color and size classification as well as in terms of grade.

(168)

Examples:

"U. S. No. 1, light halves."

"U. S. No. 1, light amber pieces and halves."

"U. S. Commercial, amber pieces."

(170) Remarks. If sampling was restricted to only part of the lot, the fact should be shown here. In case the applicant states that the lot

is to be loaded into or has been unloaded from a car or truck of specified serial or license number, it may be reported that: "Applicant states above lot is to be loaded into trailer licensed R-4560-Cal." or " ----- was unloaded from car _____."

CHECK SAMPLE

The check sample shall consist of slightly more meats than were used for the grade analysis. Package in several layers of paper bags tightly folded shut or metal container with tight fitting lid to protect the nuts against insect infestation. Hold the sample for a period of 30 days. (171)

Inspector's NOTESHEET for Shelled Walnuts

Analysis Sample _____ Grams
Second Sample _____ Grams
Third Sample _____ Grams

Certificate No._____

SIZE ANALYSIS

	HALVES				PIECES									
	HALVES		3/4- HALVES		Ride 24/64		Pass 24/64		Pass 16/64		Pass 8/64		Other	
	Gms.	Pct.	Gms.	Pct.	Gms.	Pct.	Gms.	Pct.	Gms.	Pct.	Gms.	Pct.	Gms.	Pct.
1														
2														
3														

COLOR ANALYSIS

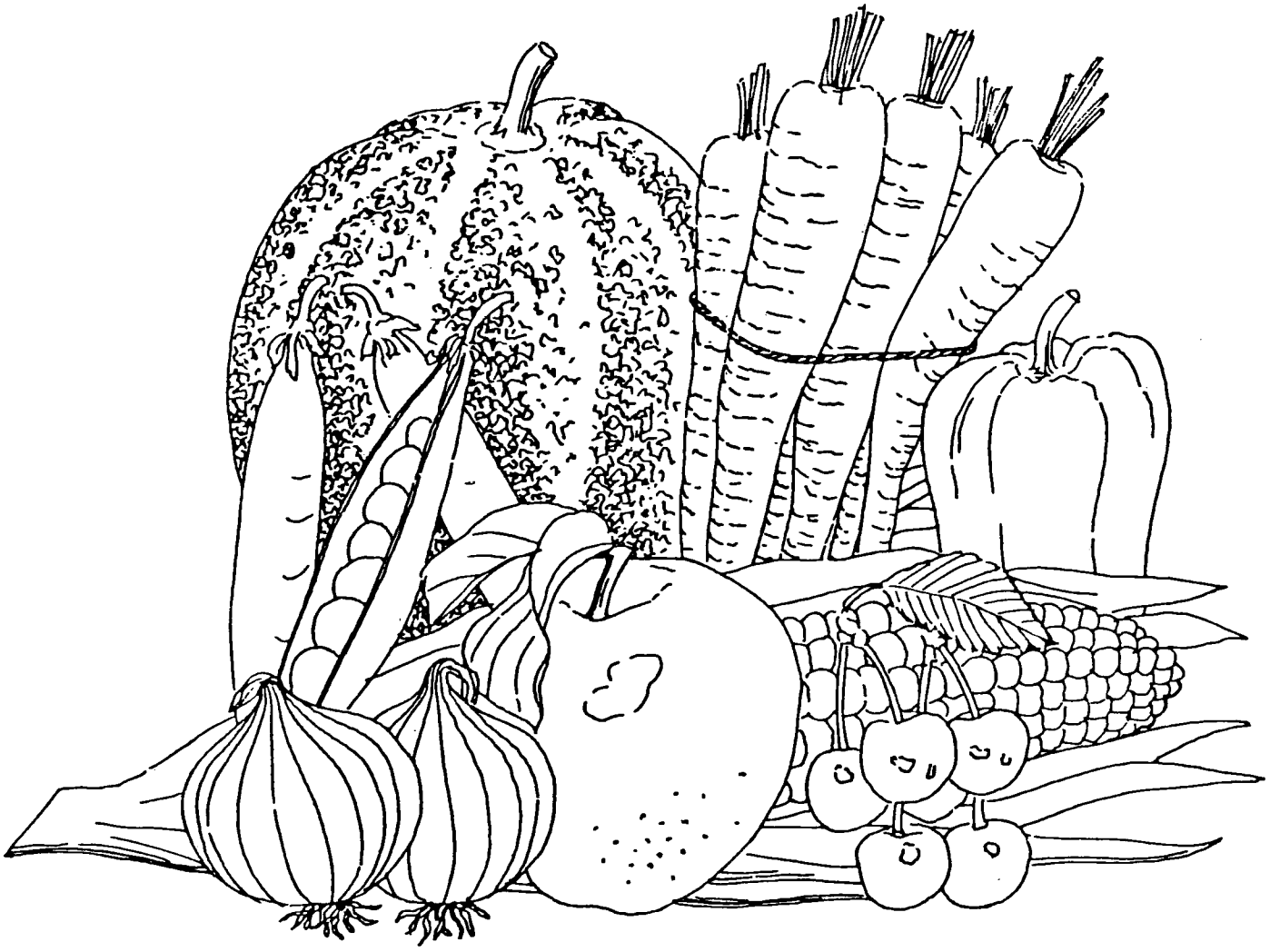
	LIGHT		LIGHT AMBER		AMBER		DARKER THAN AMBER	
	Grams	Percent	Grams	Percent	Grams	Percent	Grams	Percent
1								
2								
3								

QUALITY ANALYSIS

	Defective or Damaged		Serious Damage		Very Serious Damage		Shell and Foreign Material		Total Defects
	Grams	Percent	Grams	Percent	Grams	Percent	Grams	Percent	Percent
1									
2									
3									

(Record type of defects below)

United States Standards



UNITED STATES STANDARDS FOR GRADES OF WALNUTS (Juglans regia) IN THE SHELL[1/]

(29 F.R. 12865)

Revised, Effective November 15, 1976

AUTHORITY: §§ 51.2945 to 51.2966 issued under secs. 203, 205, 60 Stat. 1087, as amended, 1090 as amended; 7 U.S.C. 1622, 1624.

GENERAL

§ 51.2945 Application.

The standards contained in this subpart apply only to walnuts commonly known as English or Persian walnuts (Juglans regia). They do not apply to the walnuts commonly known as black walnuts (Juglans nigra).

[1] Packing of the product in conformity with the requirements 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.

§ 51.2946 Color chart.

The color chart (USDA Walnut Color Chart) to which reference is made in §§ 51.2948, 51.2949, 51.2950, 51.2954, and 51.2963 illustrates four shades of color used to describe skin color of walnut kernels.

(a) *Availability of color chart.* The USDA Walnut Color Chart cited in this subpart has been filed with the original document and is available for inspection in the Office of the Federal Register. The color chart is also available for inspection in the Fruit and Vegetable Division, AMS, U.S. Department of Agriculture, South Building, Washington, D.C. 20250, in any field office of the Fresh Fruit and Vegetable Inspection Service of the Fruit and Vegetable Division, or upon request of any authorized inspector of such Service. Copies of the color chart may be purchased from Munsell Color Co., Inc., 2441 North Calvert Street, Baltimore, Md. 21218.

§ 51.2947 Method of inspection.

In determining the grade of a lot of walnuts, all of the nuts in the sample first should be graded for size and then examined for external defects. The same nuts then should be cracked and examined for internal defects. The nuts must meet the requirements for both external and internal quality in order to meet a designated grade.

GRADES

§ 51.2948 U.S. No. 1.

"U.S. No. 1" consists of walnuts in shells which are dry, practically clean, bright and free from splits, injury by discoloration, and free from damage caused by broken shells, perforated shells, adhering hulls or other means. The kernels are well dried, free from decay, dark discoloration, rancidity, and free from damage caused by mold, shriveling, insects or other means. (See § 51.2954.)

(a) At least 70 percent, by count, of the walnuts have kernels which are not darker than "light amber" (see color chart), and which are free from grade defects: *Provided,* That at least four-sevenths of the above amount, or 40 percent of the walnuts have kernels which are not darker than "light" (see color chart). Higher percentages of nuts with kernels not darker than "light amber" which are free from grade defects and/or higher percentages with kernels not darker than "light" which are free from grade defects, may be specified in accordance with the facts. (See § 51.2954.)

(b) Size shall be specified in connection with the grade. (See § 51.2952.)

§ 51.2949 U.S. No. 2.

"U.S. No. 2" consists of walnuts in shells which are dry, practically clean and free from splits, and free from damage caused by broken shells, perforated shells, adhering hulls, discoloration or other means. The kernels are well dried, free from decay, dark discoloration, rancidity, and free from damage caused by mold, shriveling, insects or other means. (See § 51.2954.)

(a) At least 60 percent, by count, of the walnuts have kernels which are not darker than "light amber" (see color chart), and which are free from grade defects. Higher percentages of nuts with kernels not darker than "light amber" which are free from grade defects, and/or percentages with kernels not darker than "light" (see color chart) which are free from grade defects, may be specified in accordance with the facts. (See § 51.2954.)

(b) Size shall be specified in connection with the grade. (See § 51.2952.)

§ 51.2950 U.S. No. 3.

"U.S. No. 3" consists of walnuts in shells which are dry, fairly clean, free from splits, and free from damage caused by broken shells, and free from serious damage caused by discoloration, perforated shells, adhering hulls or other means. The kernels are well dried, free from decay, dark discoloration, rancidity, and free from damage caused by mold, shriveling, insects or other means. (See § 51.2954.)

(a) There is no requirement in this grade for the percentage of walnuts having kernels which are "light amber" or "light". However, the percentage, by count, of nuts with kernels not darker than "light amber" (see color chart) which are free from grade defects and/or the percentage with kernels not darker than "light" (see color chart) which are free from grade defects, may be specified in accordance with the facts. (See § 51.2954.)

(b) Size shall be specified in connection with the grade. (See § 51.2952.)

Unclassified

§ 51.2951 Unclassified.

"Unclassified" consists of walnuts in the shell which have not been classified in accordance with any of the foregoing grades. The term "unclassified" is not a grade within the meaning of these standards but is provided as a designation to show that no grade has been applied to the lot.

Size Specifications

§ 51.2952 Size specifications.

Size shall be specified in accordance with the facts in terms of one of the following classifications:

(a) *Mammoth size.* Mammoth size means walnuts of which not over 12 percent, by count, pass through a round opening $^{96}/_{64}$ inches in diameter;

(b) *Jumbo size.* Jumbo size means walnuts of which not over 12 percent, by count, pass through a round opening $^{80}/_{64}$ inches in diameter;

(c) *Large size.* Large size means walnuts of which not over 12 percent, by count, pass through a round opening $^{77}/_{64}$ inches in diameter; except that for walnuts of the Eureka variety and type, such limiting dimension as to diameter shall be $^{76}/_{64}$ inches;

(d) *Medium size.* Medium size means walnuts of which at least 88 percent, by count, pass through a round opening $^{77}/_{64}$ inches in diameter, and of which not over 12 percent, by count, pass through a round opening $^{73}/_{64}$ inches in diameter;

(e) *Standard size.* Standard size means walnuts of which not over 12 percent, by count, pass through a round opening $^{73}/_{64}$ inches in diameter;

(f) *Baby size.* Baby size means walnuts of which at least 88 percent, by count, pass through a round opening $^{74}/_{64}$ inches in diameter, and of which not over 10 percent, by count, pass through a round opening $^{60}/_{64}$ inch in diameter; and,

(g) *Minimum diameter, or minimum and maximum diameter.* In lieu of one of the foregoing classifications, size of walnuts may be specified in terms of minimum diameter, or minimum and maximum diameter: *Provided,* That not more than 12 percent, by count, pass through a round hole of the specified minimum diameter, and at least 88 percent, by count, pass through a round hole of any specified maximum diameter.

VARIETY OR TYPE SPECIFICATIONS

§ 51.2953 Variety or type specifications.

The variety or type of any lot of walnuts in the shell may be specified in accordance with the facts as follows:

(a) If the lot is of one named variety, that variety name may be specified, *Provided,* That not over 10 percent, by count, of the walnuts in the lot are of another variety or type than that specified; and,

(b) If the lot is a mixture of two or more distinct varieties or types it may be specified as "Mixed Varieties".

TOLERANCES FOR GRADE DEFECTS

§ 51.2954 Tolerances for grade defects.

In order to allow for variations incident to proper grading and handling, the following tolerances shall be permitted for nuts which fail to meet the requirements of the respective grades as indicated. Terms in quotation marks refer to color classification illustrated on the color chart.

Tolerances for grade defects

Grade	External (shell) defects	Internal (kernel) defects	Color of kernel
U.S. No. 1	10 pct. by count for splits. 5 pct, by count, for other shell defects, including not more than 3 pct seriously damaged.	10-pct total by count, including not more than 6 pct which are damaged by mold or insects or seriously damaged by other means, of which not more than 5/6 or 5 pct may be damaged by insects, but no part of any tolerance shall be allowed for walnuts containing live insects.	No tolerance to reduce the required 70 pct of "light amber" kernels or the required 40 pct of "light" kernels or any larger percentage of "light amber" or "light" kernels specified.
U.S. No. 2	10 pct, by count, for splits. 10 pct, by count, for other shell defects, including not more than 5 pct serious damage by adhering hulls.	15 pct total, by count, including not more than 8 pct which are damaged by mold or insects or seriously damaged by other means, of which not more than 5/6 or 5 pct may be damaged by insects, but no part of any tolerance shall be allowed for walnuts containing live insects.	No tolerance to reduce the required 60 pct or any specified larger percentage of "light amber" kernels, or any specified percentage of "light" kernels.
U.S. No. 3	Same as above tolerance for U.S. No. 2.	Same as above tolerance for U.S. No. 2.	No tolerance to reduce any percentage of "light amber" or "light" kernel specified.

APPLICATION OF TOLERANCES

§ 51.2955 Application of tolerances.

The tolerances provided in these standards are on a lot basis, and they shall be applied to a composite sample representative of the lot. However, any identifiable container or group of containers in which the walnuts are obviously of a quality materially different from that in the majority of the containers shall be considered as a separate lot, and shall be sampled separately.

DEFINITIONS

§ 51.2956 Practically clean.

"Practically clean" means that, from the viewpoint of general appearance, the walnuts are practically free from adhering dirt or other foreign matter, and that individual walnuts are not damaged by such means. A slightly chalky deposit on the shell is characteristic of many bleached nuts and shall not be considered as dirt or foreign matter.

§ 51.2957 Bright.

"Bright" means a fairly light, attractive appearance. A slight chalky deposit on the shell shall not be considered as affecting brightness.

§ 51.2958 Splits.

"Splits" means walnuts with the seam opened completely around the nut so that the two halves of the shell are held together only by the kernel.

§ 51.2959 Injury by discoloration.

"Injury by discoloration" means that the color of the affected portion of the shell objectionably contrasts with the color of the rest of the shell of the individual nut.

§ 51.2960 Damage.

"Damage" means any specific defect mentioned 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 shipping quality of the individual walnut or the lot as a whole. The following specific defects shall be considered as damage:

(a) Broken shells when the area from which a portion of the shell is missing is greater than the area of a circle one-fourth inch in diameter; or when the two halves of the shell have become completely broken apart and separated from each other;

(b) Perforated shells when the area affected aggregates more than that of a circle one-fourth inch in diameter. The term "perforated shells" means imperfectly developed areas on the shell resembling abrasions and usually including small holes penetrating the shell wall;

(c) Adhering hulls when affecting more than 5 percent of the shell surface;

(d) Discoloration (or stain) which covers, in the aggregate, one-fifth or more of the surface of the shell of an individual nut, and which is brown, reddish brown, gray, or other color in pronounced contrast with the color of the rest of the shell or the majority of shells in the lot, or darker discoloration covering a smaller area if the appearance is equally objectionable;

(e) Mold when attached to the kernel and conspicuous; or when inconspicuous white or gray mold affects an aggregate area larger than one square centimeter or one-eighth of the entire surface of the kernel, whichever is the lesser area;

(f) Shriveling when more than 5 percent of the surface of the kernel, including both halves, is severely shriveled, or a greater area is affected by lesser degrees of shriveling producing an equally objectionable appearance. Kernels which are thin in cross section but which are otherwise normally developed shall not be considered as damaged; and,

(g) Insects when an insect or insect fragment, web or frass is present inside the shell, or the kernel shows distinct evidence of insect feeding.

§ 51.2961 Well dried.

"Well dried" means that the kernel is firm and crisp, not pliable or leathery.

§ 51.2962 Decay.

"Decay" means that any portion of the kernel is decomposed.

§ 51.2963 Dark discoloration.

"Dark discoloration" means that the color of the skin of the kernel is darker than "amber". (See color chart.)

§ 51.2964 Rancidity.

"Rancidity" means the stage of deterioration in which the kernel has developed a rancid flavor. Rancidity should not be confused with a slightly astringent flavor of the pellicle (skin) or with staleness, the stage at which the flavor is flat but not distasteful.

§ 51.2965 Fairly clean.

"Fairly clean" means that, from the viewpoint of general appearance, the lot is not seriously damaged by adhering dirt or other foreign matter, and that individual walnuts are not coated or caked with dirt or foreign matter. Both the amount of surface affected and the color of the dirt shall be taken into consideration.

§ 51.2966 Serious damage.

"Serious damage" means any specific defect mentioned in this section; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects which seriously detracts from the appearance or the edible or shipping quality of the walnut. The following specific defects shall be considered as serious damage:

(a) Discoloration (or stain) which covers, in the aggregate, one-third or more of the surface of the shell of an individual nut and which is brown, reddish brown, gray, or other color in pronounced contrast with the color of the rest of the shell or the majority of shells in the lot, or darker discoloration covering a smaller area if the appearance is equally objectionable;

(b) Perforated shells when the area affected aggregates more than that of a circle three-eighths of an inch in diameter. The term "perforated shells" means imperfectly developed areas on the shell resembling abrasions and usually including small holes penetrating the shell wall;

(c) Adhering hulls when affecting more than one-eighth of the shell surface in the aggregate;

(d) Shriveling when both halves of the kernel are affected by severe shriveling over an area totaling more than one-eighth of the surface; or when both halves are affected over a greater area by lesser degrees of shriveling producing an equally objectionable appearance. When one of the halves of the kernel shows no shriveling, the kernel shall not be considered seriously damaged unless the other half shows shriveling to the extent that over 50 percent of its surface is severely shriveled, or a greater area is affected by lesser degrees of shriveling producing an equally objectionable appearance. Kernels which are thin in cross section, but which are otherwise normally developed shall not be considered as damaged;

(e) Rancidity or decay; and,

(f) Uncured kernels which are wet, rubbery and "green".

This printing of these standards incorporates amended Section 51.2946, effective September 1, 1968 and amended Section 51.2954, effective November 15, 1976.

UNITED STATES STANDARDS FOR GRADES OF SHELLED WALNUTS (Juglans regia)[1/]

Effective January 25, 1959 (23 F.R. 10354)
As Amended September 1, 1968 (33 F.R. 10840)

SOURCE: 23 FR 10354, Dec. 25, 1958, unless otherwise noted. Redesignated at 42 FR 32514, June 27, 1977 and at 46 FR 63203, Dec. 31, 1981.

GENERAL

GRADES

UNCLASSIFIED

TOLERANCES FOR GRADE DEFECTS

COLOR REQUIREMENTS

SIZE REQUIREMENTS

APPLICATION OF TOLERANCES

DEFINITIONS

AUTHORITY: §§ 51.2275 to 51.2296 issued under sec. 205, 60 Stat. 1090, as amended; 7 U.S.C. 1624.

GENERAL

§ 51.2275 Application.

The standards contained in this subpart apply only to walnuts commonly known as English or Persian walnuts (Juglans regia). They do not apply to walnuts commonly known as black walnuts (Juglans nigra).

§ 51.2276 Color chart.

The color chart (USDA Walnut Color Chart) to which reference is made in §§ 51.2281 and 51.2282 illustrates the four shades of walnut skin color listed as color classifications.

(a) *Availability of color chart.* The USDA Walnut Color Chart cited in this subpart has been filed with the original document and is available for inspection in the Office of the Federal Register. The color chart is also available for inspection in the Fruit and Vegetable Division, C&MS, U.S. Department of Agriculture, South Building, Washington, D.C. 20250, in any field office of the Fresh Fruit and Vegetable Inspection Service of the Fruit and Vegetable Division, or upon request of any authorized inspector of such Service. Copies of the color chart may be purchased from Munsell Color Co., Inc., 2441 North Calvert Street, Baltimore, Md. 21218.

GRADES

§ 51.2277 U.S. No. 1.

"U.S. No. 1" consists of portions of walnut kernels which are well dried, clean, free from shell, foreign material, insect injury, decay, rancidity, and free from damage caused by shriveling, mold, discoloration of the meat or other means. (See § 51.2280.)

(a) Color shall be specified in connection with this grade in terms of one of the color classifications. (See §§ 51.2276, 51.2281 and 51.2282.)

(b) Size shall be specified in connection with this grade in terms of one of the size classifications. (See §§ 51.2284 and 51.2285.)

§ 51.2278 U.S. Commercial.

"U.S. Commercial" consists of portions of walnut kernels which meet the requirements of U.S. No. 1 grade, except for increased tolerances. (See § 51.2280.)

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[1] 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.

(a) Color of walnuts in this grade shall be not darker than "amber" classification, and color need not be specified. However, color may be specified in connection with the grade in terms of one of the color classifications. (See §§ 51.2276, 51.2281 and 51.2282.)

(b) Size shall be specified in connection with this grade in terms of one of the size classifications. (See §§ 51.2284 and 51.2285.)

Unclassified

§ 51.2279 Unclassified.

"Unclassified" consists of portions of walnut kernels which have not been classified in accordance with either of the foregoing grades. The term "unclassified" is not a grade within the meaning of these standards, but is provided as a designation to show that no grade has been applied to the lot.

Tolerances for Grade Defects

§ 51.2280 Tolerances for grade defects.

(a) All percentages shall be calculated on the basis of weight.

(b) In order to allow for variations, other than for color and size, incident to proper grading and handling, tolerances shall be permitted for the respective grades as indicated in Table I:

Table I

Grade	Tolerances for grade defects			
	Total defects	Serious damage	Very serious damage	Shell and foreign material
	Percent	*Percent*	*Percent*	*Percent*
U. S. No. 1	5	2 (included in 5 percent total defects).	1 (included in 2 percent serious damage).	0.05 (included in 1 percent very serious damage).
U. S. Commercial	8	4 (included in 8 percent total defects).	2 (included in 4 percent serious damage).	0.05 (included in 2 percent very serious damage).

Color Requirements

§ 51.2281 Color classifications.

The following classifications are provided to describe the color of any lot: "Extra Light", "Light", "Light Amber" or "Amber". The portions of kernels in the lot shall not be darker than the darkest color permitted in the specified classification as shown on the color chart.

§ 51.2282 Tolerances for color.

(a) All percentages shall be calculated on the basis of weight.

(b) In order to allow for variations incident to proper grading and handling, tolerances shall be permitted for the respective color classifications as indicated in Table II:

Table II

Color classification	Tolerances for color			
	Darker than extra light [1]	Darker than light [1]	Darker than light amber [1]	Darker than amber [1]
Extra light	15 percent	2 percent (included in 15 percent darker than extra light).		
Light		15 percent	2 percent (included in 15 percent darker than light).	
Light amber			15 percent	2 percent (included in 15 percent darker than light amber).
Amber				10 percent.

[1] See illustration of this term on color chart.

§ 51.2283 Off color.

The term "off color" is not a color classification, but shall be applied to any lot which fails to meet the requirements of the "Amber" classification.

Size Requirements

§ 51.2284 Size classification.

The following classifications are provided to describe the size of any lot: "Halves", "Pieces and Halves", "Pieces" or "Small Pieces". The size of portions of kernels in the lot shall conform to the requirements of the specified classification as defined below:

(a) *Halves.* Lot consists of 85 percent or more, by weight, half kernels, and the remainder three-fourths half kernels. (See § 51.2285.)

(b) *Pieces and halves.* Lot consists of 20 percent or more, by weight, half kernels, and the remainder portions of kernels that cannot pass through a sieve with 24/64 inch round openings. When a lot exceeds this minimum requirement, the actual percentage of halves may be specified. (See § 51.2285.)

(c) *Pieces.* Lot consists of portions of kernels that cannot pass through a sieve with 24/64 inch round openings. (See § 51.2285.)

(d) *Small pieces.* Lot consists of portions of kernels that pass through a sieve with 24/64 inch round openings, but that cannot pass through a sieve with 8/64 inch round openings. When desired, the actual size ranges within such size ranges may be specified. (See § 51.2285.)

§ 51.2285 Tolerances for size.

(a) All percentages shall be calculated on the basis of weight.

(b) In order to allow for variations incident to proper sizing and handling, tolerances shall be permitted for the respective size classifications as indicated in Table III:

Table III

Size classification	Tolerances for size				
	Smaller than three-fourths halves	Will not pass through 25/64 inch round hole	Pass through 25/64 inch round hole	Pass through 19/64 inch round hole	Pass through 9/64 inch round hole
	Percent	*Percent*	*Percent*	*Percent*	*Percent*
Halves	5			1 (included in 5 percent).	
Pieces and halves [1]			18	3 (included in 18 percent).	1 (included in 3 percent).
Pieces			25	5 (included in 25 percent)	1 (included in 5 percent).
Small pieces [2]		10			2.

[1] No part of any tolerance shall be used to reduce the percentage of halves required or specified in a lot of "pieces and halves".

[2] The tolerances of 10 percent and 2 percent for "small pieces" classification shall apply, respectively, to any smaller maximum or any larger minimum sizes specified.

Application of Tolerances

§ 51.2286 Application of tolerances.

The tolerances provided in these standards are on a lot basis, and they shall be applied to a composite sample representative of the lot. However, any container or group of containers in which the walnuts are obviously of a quality materially different from that in the majority of containers shall be considered a separate lot, and shall be sampled separately.

Definitions

§ 51.2287 Well dried.

"Well dried" means that the portion of kernel is firm and crisp, not pliable or leathery.

§ 51.2288 Clean.

"Clean" means that the appearance of the individual portion of kernel, or of the lot as a whole, is not materially affected by adhering dust, dirt or other foreign material.

§ 51.2289 Shell.

"Shell" means the outer shell and/or the woody partition from between the halves of the kernel, and any fragments of either.

§ 51.2290 Insect injury.

"Insect injury" means that the insect, web, frass or other evidence of insects is present on the portion of kernel.

§ 51.2291 Rancidity.

"Rancidity" means that the portion of kernel is noticeably rancid to the taste. Rancidity should not be confused with a slightly astringent flavor of the pellicle (skin) or with staleness (the stage at which the flavor is flat but not objectionable).

§ 51.2292 Damage.

"Damage" means any defect, other than color, which materially affects the appearance, or the edible or shipping quality of the individual portion of kernel, or of the lot as a whole. Any one of the following defects or any combination of defects the seriousness of which exceeds the maximum allowed for any one defect shall be considered as damage:

(a) Shriveling when more than one-eighth of the portion of kernel is severely shriveled, or a greater area is affected by lesser degrees of shriveling producing an equally objectionable appearance, except that kernels which are thin in cross-section but which are otherwise normally developed shall not be considered as damaged;

(b) Mold when plainly visible;

(c) Discoloration of the meat when more than one-eighth the volume of the portion of kernel is severely discolored, or a greater volume is affected by lesser degrees of discoloration producing an equally objectionable appearance;

(d) Not well dried; and,

(e) Not clean.

§ 51.2293 Serious damage.

"Serious damage" means any defect, other than color, which seriously affects the appearance, or the edible or shipping quality of the individual portion of kernel or of the lot as a whole. Any one of the following defects or any combination of defects the seriousness of which exceeds the maximum allowed for any one defect shall be considered as serious damage:

(a) Shriveling when more than one-fourth of the kernel is severely shriveled, or a greater area is affected by lesser degrees of shriveling producing an equally objectionable appearance;

(b) Mold when plainly visible on more than one-eighth of the surface of the kernel in the aggregate; and,

(c) Discoloration of the meat when more than one-fourth the volume of the portion of kernel is severely discolored, or a greater volume is affected by lesser degrees of discoloration producing an equally objectionable appearance.

§ 51.2294 Very serious damage.

"Very serious damage" means any defect, other than color, which very seriously affects the appearance, or the edible or shipping quality of the individual portion of kernel or of the lot as a whole. Any one of the following defects or any combination of defects the seriousness of which exceeds the maximum allowed for any one defect shall be considered as very serious damage:

(a) Shriveling when more than 50 percent of the portion of kernel is severely shriveled;

(b) Mold when plainly visible on more than one-fourth of the surface of the portion of kernel in the aggregate;

(c) Discoloration of the meat when more than one-half the volume of the portion of kernel is severely discolored;

(d) Insect injury;

(e) Rancidity or decay; and,

(f) Shell, or any foreign material.

§ 51.2295 Half kernel.

"Half kernel" means the separated half of a kernel with not more than one-eighth broken off.

§ 51.2296 Three-fourths half kernel.

"Three-fourths half kernel" means a portion of a half of a kernel which has more than one-eighth but not more than one-fourth broken off.

This printing of these standards incorporates amended Section 51.2276, effective September 1, 1968.

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