



NCBA PROCEDURE LARIMER COUNTY FAIR HONEY and HONEY PRODUCT JUDGING PROCESS

Basic Information:

The Larimer County Fair is the first full week of August.

In March, the Larimer County Fair open class coordinator contacts NCBA to confirm NCBA participation and financial support of the awards.

NCBA begins marketing of the competition with members in late Spring and encourages members to participate.

Interested members, complete the entry process on the Larimer County Fair open class registration site.

The general meeting in June traditionally offers an education session to members on prepping for the fair.

Reminders are placed in the monthly newsletter and posted on Facebook.

To encourage participation, NCBA offers honey and product competitors an opportunity to participate in a drawing for a honey bucket and strainers, or similar prize.

All honey and wax entries must have been produced by the submitter within the last 12 calendar months.

At the end of the fair, the NCBA president requests a list of competitor names from the Larimer County open class coordinator to determine which competitors are NCBA members. After membership verification, competitors' names are entered into the drawing and the winner announced.

Any member awarded a county fair prize is listed in the upcoming newsletter.

Equipment Required and Provided by NCBA:

Refractometer

Flash light

Scale



HONEY PRODUCTS INFORMATION

Extracted Honey

Extracted honey is the most basic of hive products, and therefore the category has the largest entry in most competitions. It can also be one of the more difficult categories in which to perform well, so understanding the judge's criteria is very important to achieve a high score. There are light, amber, and dark categories of extracted honey.

- 1. Container appearance (10 points)** All of the containers, including lids, must be free of defects, scratches, and smudges. The inside of the lids must also be clean and have no honey residue. The jar is neatly labeled with the source and date extracted.
- 2. Density (20 points)** The moisture content of honey is typically measured with a special instrument called a refractometer. If the moisture content of the extracted honey is above 18.6%, the entry is *automatically disqualified* because it may permit microbial growth and ferment. Water content below 16.4%, while not disqualified, may be docked points by the judge's discretion.
- 3. Absence of crystals (10 points)** The honey should be free of crystallization. These particles can best be viewed with a bright flashlight or polariscope (a special polarized light source that highlights particulate matter in honey).
- 4. Cleanliness (25 points).** There should be an absence of lint (7 points), dirt (10 points), wax (7 points), and foam or bubbles (6 points) in the honey. While these particles can never be removed completely, they can be greatly reduced using proper straining and settling techniques.
- 5. Flavor (20 points)** Points will be reduced for honey flavor that has been adversely affected by processing, storage, or heating. This does *not* include subjective differences in taste depending on the floral source of the honey.
- 6. Accuracy of filling and uniformity (15 points)** Sets of three jars are required for each entry. Each vessel must be filled to just below the top rim and should be consistent among all three jars. Also, there should be an absence of air bubbles in the honey or foam on the surface.



Cut Comb Honey

This is bulk comb honey cut into pieces, edges drained, and suitably wrapped or packaged in a transparent container for marketing.

Entry is one piece with a straight mid rib and of uniform thickness.

One square or round section – 4 inch square or 4-inch Ross round type comb.

The cut comb should fit the container fully and snugly.

1. Container appearance and suitability of wrapping (15 points)

All containers must be transparent, free of defects, scratches, and smudges.

2. Uniformity of appearance of comb and freedom of impurities (10 points)

The combs can vary in particulates, wax thickness, and other contaminants.

3. Absence of watery cappings (20 points)

Some cappings are pure white, while others are darker and appear “watery”. Watery cappings can be caused by bruising or excess jarring.

4. Cleanliness (20 points) - absence of travel stain, pollen, and crushed wax.

5. Absence of liquid honey (15 points)

6. Neatness (15 points) - All edges should be straight, unbroken, parallel, and sharp. Jagged, uneven combs can be avoided by using a warm, razor-sharp knife to cut the sections.

a. Upgrade for 4 parallel-sided cuts

b. Downgrade for ragged edges



Chunk Comb Honey in Jar

A combination of extracted honey and cut comb honey in a jar. There are light, amber, and dark categories of chunk honey.

One jar per entry.

This entry consists of cut-comb honey in a container which is then filled with liquid extracted honey. Not less than 50% by volume of comb honey must be present in the container.

The container must be a wide-mouth pint glass jar suitable for receiving and removing the comb portion.

Minimum comb: 3 X 4-inch piece that extends the depth of the liquid honey.

1. **Container and Suitability (10)** – appearance, lid, jar, and label indicating date of extraction
2. **Cleanliness (20 points)**
 - a. Points will be deducted for stains, foreign matter, wax flakes, foam, bubbles, and crystallization.
3. **Density (10 points)**
 - a. Water content above 18.6% will be *disqualified AND* no upgrading below 16.4% water content. Points will be reduced for honey flavor that has been adversely affected by processing.
4. **Flavor (10 points)**
 - a. Downgrade for objectionable flavor or overheating
 - b. Disqualify for fermentation
 - c. Quality of flavor
5. **Accuracy of Filling (5 points)** headroom: 1/2 inch maximum, 3/8 inch minimum, with no visible gap between honey level and cap
6. **Uniformity of appearance (10 points)**
 - a. All jars in the entry should be uniform within and among jars for their capping, structure, color, and thickness of chunks.
7. **Absence of watery cappings, uncapped cells and pollen (10 points)**
 - a. Cappings should be pure white and not appear wet.
8. **Neatness and uniformity of cut (20 points)**

Like with cut comb, it is preferable to have parallel, four-sided cuts with no ragged edges
9. **Amount of comb honey present (5 points)** – 50% or greater comb



Creamed Honey

Finely granulated honey that is completely granulated or solidified, either by natural means or by various controlled processes.

Creamed honey must be exhibited in ½ pint jar.

Entry is one jar.

Creamed honey is not whipped honey.

1. **Container: Appearance (10 points)** - appearance, lid, jar, and label indicating date of extraction
2. **Fineness of crystals (25 points)**
The texture of the honey should be smooth and not grainy, with the sugar crystals melting quickly on the tongue.
3. **Uniformity, smoothness and spreadability (20 points)**
4. **Cleanliness and freedom from foam and bubbles (15 points)**
Particles should not be present in the honey, and the surface and rim should be absent of bubbles.
5. **Flavor (20 points)**
Disqualify for fermentation
Downgrade for objectionable flavor or overheating
Quality of flavor
6. **Accuracy of filling (10)**
Head room: 1/2 inch maximum, 3/8 inch minimum



Beeswax in Bulk – One-pound entries of wax in a block. Beeswax entries must be pure beeswax and have been produced from the Exhibitor's Apiary.

An entry consists of one (1) block of pure beeswax. The block must weigh between at least one pound and should have a thickness of greater than 1.5 inches. The beeswax should be clean and free of impurities. The block should be smooth-surfaced and free of blemishes, decorations or embellishments. Dyes, added fragrances, glitter or paints are not acceptable.

Preferable color should be lemon yellow with a pleasant fragrance. The block should be submitted on a plain white paper plate in a clear zip-top bag or in a protective display case. The case must be easily accessible. The case will not be judged.

1. **Cleanliness (35 points):** absence of honey, propolis, and other impurities
2. **Uniformity in appearance (20 points):** there should not be any gradation in color or texture within the entry
3. **Color (15 points):** a light color is favorable, ranging from straw to canary yellow
4. **Aroma and texture (15 points):** the wax should feel smooth and non-greasy, and it should not have a distasteful or fermenting odor
5. **Absence of cracking and shrinkage (15 points):** cracks that form while cooling are some of the more difficult characters of bulk wax to prevent



Honey Frame

A frame of capped honey suitable for extracting. The entire frame must be protected with plastic wrap or suitable container.

Entry is one frame.

1. **Uniformity of appearance (25 points)**– both sides of the frame represent symmetry
2. **Absence of Uncapped Cells (20 points)**
3. **Uniformity of Color (15 points)**
4. **Absence of watery cappings (10 points)** – shaking the from does not release uncapped cells
5. **Cleanliness and absence of travel stain (20 points)** – in addition, no nicks, cuts or dents in the comb
6. **Freedom from granulation and pollen (10 points)**



EXTRACTED HONEY CATEGORIES AND JUDGING INSTRUCTIONS

Overview

Two judges or a judge and an assistant judge are required to perform judging duties for liquid extracted honey, including the infused honey category.

There are three categories for extracted honey – light, medium, and dark.

All contestants will submit three jars of honey for each category.

Upon submission, judges will evaluate correctness of category using a Pfund honey color chart grader. No points will be taken off for submitting in the wrong category.

Entry Information:

Only one jar of honey will be assessed with a refractometer.

All three jars will be individually assessed for items 1, and 3 – 6 with a cumulative scoring on one sheet.

Ribbons will be awarded based on the three highest total scores.

Depending on the number of entries in the entire light, medium and dark extracted honey category, individual Grand Champion and Reserve Grand Champion winners will be assessed.

Point Scale for Honey Density for Extracted, Infused and Chunk Comb Honey Entries

Density	<=16.4%	16.5-16.8%	16.9-17.2%	17.3-17.6%	17.7-18.0%	18.1-18.6%	18.5-18.6%	>18.6	18.9-19.2%	19.3-19.6%
Points	20	19	18	17	16	15	14	DQ	DQ	DQ



<p>EXTRACTED HONEY</p> <p>Color Class LIGHT</p> <p>Pfund scale - 8-34</p>	<p>Honey that has been separated from the comb by centrifugal force or by other means. Color will be determined using a color chart honey grader. Exhibitors may have assistance in selecting the appropriate color class for the extracted honey entries. An entry is three, half-pint glass jars per color category.</p>		
			Score
1. 1. Container: appearance, appearance, lid, jar, and label indicating date of extraction	10		
2. Density	20		
a. Water content above 18.6%: Disqualified			
b. No upgrading below 16.4% water content			
3. Freedom from crystals	10		
4. Cleanliness and freedom from foam and bubbles	25		
5. Flavor	20		
a. downgrade for objectionable flavor or overheating			
b. disqualify for fermentation			
6. Accuracy of filling	15		
a. headroom: 1/2 inch maximum, 3/8 inch minimum			
b. multiple entries: uniformity of filling of all three entries			
Total	100		



EXTRACTED HONEY Color Class MEDIUM Pfund scale - 35-84	Honey that has been separated from the comb by centrifugal force or by other means. Color will be determined using a color chart honey grader. Exhibitors may have assistance in selecting the appropriate color class for the extracted honey entries. An entry is three, half-pint glass jars per color category.		
			Score
1. 1. Container: appearance, appearance, lid, jar, and label indicating date of extraction	10		
2. Density	20		
a. Water content above 18.6%: Disqualified			
b. No upgrading below 16.4% water content			
3. Freedom from crystals	10		
4. Cleanliness and freedom from foam and bubbles	25		
5. Flavor	20		
a. downgrade for objectionable flavor or overheating			
b. disqualify for fermentation			
6. Accuracy of filling	15		
a. headroom: 1/2 inch maximum, 3/8 inch minimum			
b. multiple entries: uniformity of filling of all three entries			
Total	100		



EXTRACTED HONEY Color Class DARK Pfund scale - 85 +	Honey that has been separated from the comb by centrifugal force or by other means. Color will be determined using a color chart honey grader. Exhibitors may have assistance in selecting the appropriate color class for the extracted honey entries. An entry is three, half-pint glass jars per color category.	
		Score
1. Container: appearance, appearance, lid, jar, and label indicating date of extraction	10	
2. Density	20	
a. Water content above 18.6%: Disqualified		
b. No upgrading below 16.4% water content		
3. Freedom from crystals	10	
4. Cleanliness and freedom from foam and bubbles	25	
5. Flavor	20	
a. downgrade for objectionable flavor or overheating		
b. disqualify for fermentation		
6. Accuracy of filling	15	
a. headroom: 1/2 inch maximum, 3/8 inch minimum		
b. multiple entries: uniformity of filling of all three entries		
Total	100	



INFUSED HONEY	<p>Any color extracted honey that has been infused with spices, flowers, herbs, or aromatics to create a distinct flavor profile. Color will be determined using a color chart honey grader. An entry is one, half-pint glass jar.</p>	
		Score
1. Container: appearance, appearance, lid, jar, and label indicating date of extraction and infusion process	10	
2. Density	20	
a. Water content above 18.6%: Disqualified		
b. No upgrading below 16.4% water content		
3. Freedom from crystals	10	
4. Cleanliness and freedom from foam and bubbles	25	
5. Flavor	20	
a. downgrade for objectionable flavor or overheating		
b. disqualify for fermentation		
c. quality of flavor		
6. Accuracy of filling	15	
a. headroom: 1/2 inch maximum, 3/8 inch minimum		
Total	100	



FRAME OF HONEY	A frame of capped honey suitable for extracting. The entire frame must be protected with plastic wrap or suitable container. Entry is one frame.		Score
1. Uniformity of Appearance – both sides of frame – symmetry		25	
2. Absence of Uncapped Cells		20	
3. Uniformity of Color		15	
4. Absence of watery cappings		10	
5. Cleanliness and absence of travel stain, comb damage, etc.		20	
6. Freedom from granulation and pollen		10	
Total		100	



CUT COMB	<p>This is bulk comb honey cut into pieces, edges drained, and suitably wrapped or packaged for marketing.</p> <p>One square or round section – 4 inch square or 4-inch Ross round type comb</p> <p>Entry is one piece.</p>	
		Score
1. Container: appearance and suitability	10	
2. Uniformity of appearance	15	
3. Total weight of entry	10	
4. Absence of watery cappings uncapped cells and granulation	20	
5. Cleanliness and absence of travel stain, pollen, crushed wax, etc.	20	
6. Absence of liquid honey	10	
7. Neatness and uniformity of cut	15	
a. upgrade for 4 parallel-sided cuts		
b. downgrade for ragged edges		
Total	100	



CREAMED HONEY	Finely granulated honey is completely granulated or solidified, either by natural means or by various controlled processes. Granulated honey must be exhibited in ½ pint jar. Entry is one jar. <i>Creamed honey is not whipped honey.</i>		
			Score
1. Container: appearance, appearance, lid, jar, and label indicating date of extraction	10		
2. Fineness of crystals	25		
3. Uniformity and firmness	20		
4. Cleanliness and freedom from foam	15		
5. Flavor	20		
a. downgrade for objectionable flavor or overheating			
b. disqualify for fermentation			
c. quality of flavor			
6. Accuracy of filling	10		
a. deadroom: 1/2 inch maximum, 3/8 inch minimum			
b. uniformity of filling			
Total		100	



CHUNK COMB	This consists of cut-comb honey in a container which is then filled with liquid extracted honey, any color.	
	Not less than 50% by volume of comb honey must be present in the container. The container must be a wide-mouth pint glass jar suitable for receiving and removing the comb portion. Minimum comb: 3 X 4-inch piece. Entry is one jar.	
		Score
Comb and Liquid Portion		
1. Container: appearance, lid, jar, and label indicating date of extraction	10	
2. Cleanliness	20	
a. downgrade for wax flakes, crystals, foam, bubbles or foreign matter		
b. downgrade for travel stain		
Liquid Portion Only		
3. Density	10	
a. water content above 18.6%: Disqualified		
b. no upgrading below 16.4% water content		
4. Flavor	10	
a. downgrade for objectionable flavor or overheating		
b. disqualify for fermentation		
5. Accuracy of filling	5	
a. headroom: 1/2 inch maximum, 3/8 inch minimum		
<u>Comb Portion Only</u>		
6. Uniformity of appearance of capping structure, color, thickness of chunks	10	
7. Absence of watery cappings, uncapped cells, pollen	10	
8. Neatness and uniformity of cut	20	
a. upgrade for 4 parallel-sided cuts		
b. downgrade for ragged edges or crushed comb		
9. Amount of comb honey present	5	
a. downgrade if less than 50%		
TOTAL	100	



BEESWAX	<p>One-pound entries of wax in a block. Beeswax entries must be pure beeswax and have been produced from the Exhibitor's Apiary.</p> <p>An entry consists of one (1) block of pure beeswax. The block must weigh at least one pound and should have a thickness of greater than 1.5 inches. The beeswax should be clean and free of impurities. The block should be smooth-surfaced and free of blemishes, decorations or embellishments. Dyes, added fragrances, glitter or paints are not acceptable.</p> <p>Preferable color should be lemon yellow with a pleasant fragrance. The block should be submitted on a plain white paper plate in a clear zip-top bag or in a protective display case. The case must be easily accessible. The case will not be judged.</p>	
		Score
1. Cleanliness	35	
2. Uniformity of Appearance	20	
3. Color	15	
4. Aroma	15	
5. Absence of Cracks and Shrinkage	15	
Total	100	



Honey Judging and Standards¹ References (Modified for NCBA use)

Malcolm T. Sanford²

Judging honey is not like evaluating other commodities. The product itself is not examined so much as the care the exhibitor takes in putting it up for show. Criteria in judging livestock include conformation, weight distribution and behavior. The knowledge to expertly judge livestock is acquired only after a great deal of experience and specialized training.

Not so with honey, a product that is infinitely variable because of differences in floral source. A typical score card for extracted honey lists the following:

1. Container: appearance (10)
2. Density (20)
 1. Water content above 18.6% is disqualified
 2. No upgrading below 16.4% water content
3. Freedom from crystals (10)
4. Cleanliness and freedom from foam (30)
5. Flavor (20)
 1. Downgrade for objectionable flavor or overheating
 2. Disqualify for fermentation
6. Accuracy of filling (10)
 1. Headroom: ½ inch maximum, inch minimum; no visible gap between honey level and cap
 2. If multiple entries: uniformity of filling

Density is perhaps the most objective measurement of the above criteria. It is measured with a refractometer and numbers can be assigned with accuracy. Most judges do not upgrade for moisture content below 18.6%.

The rest of the judging categories are extremely subjective. In this example, appearance of the container is awarded 10 points. This boils down to suitability and uniformity if multiple entries are provided. Usually, shows request three identical jars for comparison. Freedom from crystals, foam and overall cleanliness are 40% of the score. This can be judged using a bright light. Many judges use polarized light. The amount of foam usually is easily observed by taking off the cap.

Perhaps most controversial is judging honey flavor. The judge cannot let preferences for certain flavors prejudice the case. Only honey that tastes alcoholic (fermented) or burned can be marked down. Finally, accuracy of filling is judged. Some contests may include a category for color/clarity. Subjectiveness in honey judging, therefore, implies a great deal of evaluating based on common sense. Expert knowhow is not needed, except perhaps in use of the refractometer.



Every contest has distinct rules and the score card should be obtained to see what criteria are being judged. Other classes of honey that might be entered include; comb honey, chunk honey and finely granulated (crystallized, creamed) honey. In addition, artistic or culinary creations and wax candles or blocks are categories found at many fairs or shows. Observation beehives and exhibits or displays advertising honey or honey bees are also judged at many fairs.

Domestic Standards

True United States Standards exist only for extracted honey. In many respects, they mirror those criteria listed above for judging honey. The latest standards were established May 23, 1985. They are classed as voluntary and are issued under the authority of the Agricultural Marketing Act of 1946. Their purpose is to provide for development of official U.S. grades to designate different levels of quality and facilitate orderly marketing of the product. Originally part of the code of Federal Regulations, Title 7- Agriculture, Part 52, the standards for honey were removed from the CFR on December 4, 1995, as part of a major revision of voluntary grade standards (see the Federal Register, 60 FR 62172). Now published separately by the Agricultural Marketing Service of the USDA and are found at <http://www.ams.usda.gov/standards/exhoney.pdf>, they are reprinted here for access by those without Internet connection.

52.1391 Product Description

Extracted honey (hereinafter referred to as honey) is honey that has been separated from the comb by centrifugal force, gravity, straining, or by other means.

52.1392 Types

The type of extracted honey is not incorporated in the grades of the finished product since the type of extracted honey, as such, is dependent upon the method of preparation and processing, and therefore is not a factor of quality for the purpose of these grades. Extracted honey may be prepared and processed as one of the following types:

1. **Liquid honey.** Liquid honey is honey that is free from visible crystals.
2. **Crystallized honey.** Crystallized honey is honey that is solidly granulated or crystallized, irrespective of whether it is candied, fondant, creamed, or spread types of crystallized honey.
3. **Partially crystallized honey.** Partially crystallized honey is honey that is a mixture of liquid honey and crystallized honey.

52.1393 Styles

1. **Filtered.** Filtered honey is honey of any type defined in these standards that has been filtered to the extent that all or most of the fine particles, pollen grains, air bubbles, or other materials normally found in suspension, have been removed.



2. **Strained.** Strained honey is honey of any type defined in these standards that has been strained to the extent that most of the particles, including comb, propolis, or other defects normally found in honey, have been removed. Grains of pollen, small air bubbles, and very fine particles would not normally be removed

52.1394 Definition of Terms

As used in these U.S. standards, unless otherwise required by the context, the following terms shall be construed, respectively, to mean:

1. **Absence of defects** means the degree of freedom from particles of comb, propolis, or other defects which may be in suspension or deposited as sediment in the honey. Classifications for the factor or quality, absence of defects, are:
 1. **Practically free** -- the honey contains practically no defects that affect the appearance or edibility of the product.
 2. **Reasonably free** -- the honey may contain defects which do not materially affect the appearance or edibility of the product.
 3. **Fairly free** -- the honey may contain defects which do not seriously affect the appearance or edibility of the product.
2. **Air bubbles** mean small visible pockets of air in suspension that may be numerous in the honey and contribute to the lack of clarity in filtered style.
3. **Aroma** means the fragrance or odor of the honey.
4. **Clarity** means, with respect to filtered style only, the apparent transparency or clearness of honey to the eye and to the degree of freedom from air bubbles, pollen grains, or other fine particles of any material suspended in the product. Classifications for the factor of quality, clarity, are:
 1. **Clear** -- the honey may contain air bubbles which do not materially affect the appearance of the product and may contain a trace of pollen grains or other finely divided particles of suspended materials which do not affect the appearance of the product.
 2. **Reasonably clear** -- the honey may contain air bubbles, pollen grains, or other finely divided particles of suspended material which do not materially affect the appearance of the product.
 3. **Fairly clear** -- the honey may contain air bubbles, pollen grains, or other finely divided particles of suspended material which do not seriously affect the appearance of the product.
5. **Comb** means the wax-like cellular structure that bees use for retaining their brood or as storage for pollen and honey. Fine particles of comb in suspension are defects and contribute to the lack of clarity in filtered style.
6. **Crystallization** means honey in which crystals have been formed.
7. **Flavor** and aroma means the degree of taste excellence and aroma for the predominant floral source. Classifications for the factor of quality, flavor and aroma, are:
 - a. **Good flavor and aroma for the predominant floral source** -- the product has a good, normal flavor and aroma for the predominant floral source or, when blended, a good flavor for the blend of floral sources and



the honey is free from caramelized flavor or objectionable flavor caused by fermentation, smoke, chemicals, or other causes with the exception of the predominant floral source.

- b. Reasonably good flavor and aroma for the predominant floral source** the product has a reasonably good, normal flavor and aroma for the predominant floral source or, when blended, a reasonably good flavor for the blend of floral sources and the honey is practically free from objectionable flavor caused by fermentation, smoke, chemicals, or other causes with the exception of the predominant floral source.
 - c. Fairly good flavor and aroma for the predominant floral source** -- the product has a fairly good, normal flavor and aroma for the predominant floral source or, when blended, a fairly good flavor for the blend of floral sources and the honey is reasonably free from caramelized flavor and is free from objectionable flavor caused by fermentation, smoke, chemicals, or other causes with the exception of the predominant floral source.
- 8. **Floral source** means the flower from which the bees gather nectar to make honey.
 - 9. **Granulation** means the initial formation of crystals in the honey.
 - 10. **Pfund color grader** means a color grading device used by the honey industry. It is not the officially approved device for determining color designation when applying these United States grade standards for the color of honey.
 - 11. **Pollen grains** means the granular, dust-like microspores that bees gather from flowers. Pollen grains in suspension contribute to the lack of clarity in filtered style.
 - 12. **Propolis** means a gum that is gathered by bees from various plants. It may vary in color from light yellow to dark brown. It may cause staining of the comb or frame and may be found in extracted honey.

52.1395 Recommended Sample Unit Sizes

- 1. Determination of color designation - the amount of product required to adequately fill a color comparator cell of any approved device used for the determination of honey color.
- 2. Factors of quality and analysis - 100 g (3.5 oz).

52.1396 Recommended Fill of Container

The recommended fill of container is not incorporated in the grades of the finished product since fill of



container, as such, is not a factor of quality for the purpose of these grades. It is recommended that each container be filled with honey as full as practical, and with respect to containers of one gallon or else, the honey shall occupy not less than 95 percent of the total capacity of the container.

52.1397 Color

The color of extracted honey is not a factor of quality for the purpose of these grades.

52.1397 Color Designations

1. The color designation of extracted honey is determined (after adjusting for cloudiness in the honey) by means of the USDA approved color standards in accordance with the range as given in [Table 1](#) .
2. The respective color designations, applicable range of each color, color range on the Pfund scale, and optical density of freshly prepared carmel-glycerin solutions are shown in [Table 1](#) .

52.1399 Tolerance for the Designations of Color of Officially Drawn Samples

When designating the color of samples that have been officially drawn and which represent a specific lot of honey, the lot shall be considered as one color if the number of containers with honey comprised of a darker color does not exceed the applicable acceptance number indicated in the sampling plans contained in 7 CFR 52.38 of the "regulations Governing Inspection and Certification of Processed Fruits and Vegetables, Processed Products Thereof, and Certain Other Processed Food Products." Provided, however, the honey in none of the containers falls below the next darker color designation. Applicable sampling plans and acceptance numbers are shown in [Table 2](#) .

52.1400 Grades

1. **U.S. Grade A** is the quality of extracted honey that meets the applicable requirements of [Table 3](#) or [Table 4](#) , and has a minimum total score of 90 points.
2. **U.S. Grade B** is the quality of extracted honey that meets the applicable requirements of Table 3 or Table 4, and has a minimum total score of 80 points.
3. **U.S. Grade C** is the quality of extracted honey that meets the applicable requirements of Table 3 or Table 4, and has a minimum total score of 70 points.
4. **Substandard** is the quality of extracted honey that fails to meet the requirements of U.S. Grade C.

52.1401 Determining the Grade

Determining the grade from the factors of quality and analysis.



1. For the factor of analysis, the soluble solids content of extracted honey is determined by means of the refractometer at 20°C (68°F). The refractive indices, corresponding percent soluble solids, and percent moisture are shown in [Table 5](#). The moisture content of honey and percent soluble solids may be determined by any other method which gives equivalent results.
2. For the factors of quality, the grade of extracted honey is determined by considering, in conjunction with the requirements of the various grades, the respective ratings for the factors of flavor and aroma, absence of defects, and clarity (except the factor of clarity is excluded for the style of strained).
3. The relative importance of each factor is expressed numerically on the scale of 100. The maximum number of points that may be given each factor is (100 total points):
 - Flavor and aroma 50 points
 - Absence of defects 40 points
 - Clarity 10 points
4. The factor of clarity for the style of strained extracted honey is not based on any detailed requirements and is not scored. The other two factors (flavor and absence of defects) are scored and the total is multiplied by 100 and divided by 90, dropping any fractions to determine the total score.
5. Crystallized honey and partially crystallized honey shall be liquefied by heating to approximately 54.4°C (130°F) and cooled to approximately 20°C (68°F) before determining the grade of the product.

52.1402 Determining the Rating for Each Factor

The essential variations within each factor are so described that the value may be determined for each factor and expressed numerically. The numerical range for the rating of each factor is inclusive (for example, 37 to 40 points means 37, 38, 39 or 40 points) and the score points shall be prorated relative to the degree of excellence for each factor.

52.1403 Requirements for Grades.

See [Tables 3](#) and [4](#).

International Standards

An international code exists for honey, but is variable and regulations are generally unique to each country. Often, specific levels of enzyme activity (diastase) and/or HMF (hydroxymethylfurfural) are allowed in imported honey. Both are influenced greatly by heating honey and can change significantly during storage or transit if the honey becomes too hot.

In addition, the level of sucrose may also be stipulated. It cannot be over emphasized that those interested in exporting honey check with their freight forwarder to determine specific standards the product must adhere to. Honey arriving at ports of entry has been



refused and shipped back if standards were not met. This resulted not only in a no sale, but also in the shipper having to pay freight both ways.

For further information on International Standards see:
http://beekeeping.com/articles/us/honey_quality.htm

Other technical information on honey can be found at the National Honey Board's technical site: <http://www.honey.com/foodindustry/techspecs>

For general information on beekeeping please visit the APIS site at <http://aphis.ifas.ufl.edu>

Tables

Table 1. Color Designations of Extracted Honey

USDA Color Designation	USDA Color Standards	Pfund Scale Millimeters	Optical Density*
Water White	Water White or lighter	8 or less	0.0945
Extra White	Water White to Extra White	8 including 17	.189
White	Extra White to White	over 17 including 34	.378
Extra Light Amber	White to Extra Light Amber	over 34 including 50	.595
Light Amber	Extra Light Amber to Light Amber	over 50 including 85	1.389
Amber	Light Amber to Amber	over 85 including 114	3.008
Dark Amber	Darker than Amber	over 114	---



* Optical Density (absorbance) = $\log_{10} (100/\text{percent transmittance})$, at 560 nm for 3.15 cm thickness for carmel-glycerin solutions measured versus an equal cell containing glycerin.

Table 2. Single Sampling Plans and Acceptable Numbers

Sample Size (number of sample units)	3	6	13	21	29
Acceptance No.	0	1	2	3	4

Table 3. Filtered Style Grade Requirements

FACTORS	GRADE A	GRADE B	GRADE C	SUBSTANDARD
Percent Soluble Solids (Minimum)	81.4	81.4	80.0	Fails Grade C
Absence of Defects	Practically free - practically none that affect appearance or edibility.	Reasonably free - do not materially affect the appearance or edibility.	Fairly free - do not seriously affect the appearance or edibility.	Fails Grade C
Score Points	37 - 40	34 - 36 ¹	31 - 33 ¹	0 - 34 ¹
Flavor & Aroma	Good - free from caramelization, smoke, fermentation, chemicals, and other causes.	Reasonably good - practically free from caramelization; free from smoke, fermentation, chemicals, and	Fairly good - reasonably free from caramelization; free from smoke, fermentation, chemicals and	Poor - Fails Grade C

		other causes.	other causes.	
Score Points	45 - 50	40 - 44 ¹	35 - 39 ¹	0 - 34 ¹
Clarity	Clear - may contain air bubbles that do not materially affect the appearance; may contain a trace of pollen grains or other finely divided particles in suspension that do not affect appearance.	Reasonably clear - may contain air bubbles, pollen grains, or other finely divided particles in suspension that do not materially affect the appearance.	Fairly clear - may contain air bubbles, pollen grains, or other finely divided particles in suspension that do not seriously affect the appearance.	Fails Grade C
Score Points	8 - 10	6 - 7	4 - 5 ¹	0 - 3 ²
¹ Limiting rule - sample units with score points that fall in this range shall not be graded above the respective grade regardless of the total score.				
² Partial limiting rule - sample units with score points that fall in this range shall not be graded above U.S. Grade C regardless of the total score.				

Table 4. Strained Style Grade Requirements

FACTORS	GRADE A	GRADE B	GRADE C	SUBSTANDARD
Percent Soluble Solids (Minimum)	81.4	81.4	80.0	Fails Grade C

Absence of Defects	Practically free - practically none that affect appearance or edibility.	Reasonably free - do not materially affect the appearance or edibility.	Fairly free - do not seriously affect the appearance or edibility.	Fails Grade C
Score Points	37 - 40	34 - 36 ¹	31 - 33 ¹	0 - 30 ¹
Flavor & Aroma	Good - free from caramelization, smoke, fermentation, chemicals, and other causes.	Reasonably good - practically free from caramelization; free from smoke, fermentation, chemicals, and other causes.	Fairly good - reasonably free from caramelization; free from smoke, fermentation, chemicals and other causes.	Poor - Fails Grade C
Score Points	45 - 50	40 - 44 ¹	35 - 39 ¹	0 - 34 ¹
¹ Limiting rule - sample units with score points that fall in this range shall not be graded above the respective grade regardless of the total score.				

Table 5. Refractive Indices, Corresponding Percent Soluble Solids, and Percent Moisture in Extracted Honey*

Refractive Index @ 20(Range)	Percent Soluble Solids	Percent Moisture	Refractive Index @ 20(Range)	Percent Soluble Solids	Percent Moisture
1.4817 - 1.4818	78.1	21.9	1.4930 - 1.4932	82.6	17.4
1.4819 - 1.4820	78.2	21.8	1.4933 - 1.4934	82.7	17.3



1.4821 - 1.4823	78.3	21.7	1.4935 - 1.4936	82.8	17.2
1.4824 - 1.4825	78.4	21.6	1.4937 - 1.4939	82.9	17.1
1.4826 - 1.4828	78.5	21.5	1.4940 - 1.4941	83.0	17.0
1.4829 - 1.4830	78.6	21.4	1.4942 - 1.4944	83.1	16.9
1.4831 - 1.4833	78.7	21.3	1.4945 - 1.4946	83.2	16.8
1.4834 - 1.4835	78.8	21.2	1.4947 - 1.4949	83.3	16.7
1.4836 - 1.4838	78.9	21.1	1.4950 - 1.4951	83.4	16.6
1.4839 - 1.4840	79.0	21.0	1.4952 - 1.4954	83.5	16.5
1.4841 - 1.4843	79.1	20.9	1.4955 - 1.4957	83.6	16.4
1.4844 - 1.4845	79.2	20.8	1.4958 - 1.4959	83.7	16.3
1.4846 - 1.4848	79.3	20.7	1.4960 - 1.4962	83.8	16.2
1.4849 - 1.4850	79.4	20.6	1.4963 - 1.4964	83.9	16.1
1.4851 - 1.4853	79.5	20.5	1.4965 - 1.4967	84.0	16.0
1.4854 - 1.4855	79.6	20.4	1.4968 - 1.4969	84.1	15.9
1.4856 - 1.4858	79.7	20.3	1.4970 - 1.4972	84.2	15.8
1.4859 - 1.4860	79.8	20.2	1.4973 - 1.4975	84.3	15.7
1.4861 - 1.4863	79.9	20.1	1.4976 - 1.4977	84.4	15.6
1.4864 - 1.4865	80.0	20.0	1.4978 - 1.4980	84.5	15.5
1.4866 - 1.4868	80.1	19.9	1.4981 - 1.4982	84.6	15.4
1.4869 - 1.4870	80.2	19.8	1.4983 - 1.4984	84.7	15.3
1.4871 - 1.4873	80.3	19.7	1.4985 - 1.4987	84.8	15.2
1.4874 - 1.4875	80.4	19.6	1.4988 - 1.4990	84.9	15.1
1.4876 - 1.4878	80.5	19.5	1.4991 - 1.4993	85.0	15.0
1.4879 - 1.4880	80.6	19.4	1.4994 - 1.4995	85.1	14.9
1.4881 - 1.4883	80.7	19.3	1.4996 - 1.4998	85.2	14.8
1.4884 - 1.4885	80.8	19.2	1.4999 - 1.5000	85.3	14.7
1.4886 - 1.4888	80.9	19.1	1.5001 - 1.5003	85.4	14.6
1.4889 - 1.4890	81.0	19.0	1.5004 - 1.5005	85.5	14.5
1.4891 - 1.4893	81.1	18.9	1.5006 - 1.5008	85.6	14.4
1.4894 - 1.4896	81.2	18.8	1.5009 - 1.5011	85.7	14.3
1.4897 - 1.4898	81.3	18.7	1.5012 - 1.5013	85.8	14.2



1.4899 - 1.4901	81.4	18.6	1.5014 - 1.5016	85.9	14.1
1.4902 - 1.4903	81.5	18.5	1.5017 - 1.5018	86.0	14.0

1.4904 - 1.4906	81.6	18.4	1.5019 - 1.5021	86.1	13.9
1.4907 - 1.4908	81.7	18.3	1.5022 - 1.5024	86.2	13.8
1.4909 - 1.4911	81.8	18.2	1.5025 - 1.5026	86.3	13.7
1.4912 - 1.4913	81.9	18.1	1.5027 - 1.5029	86.4	13.6
1.4914 - 1.4916	82.0	18.0	1.5030 - 1.5031	86.5	13.5
1.4917 - 1.4918	82.1	17.9	1.5032 - 1.5034	86.6	13.4
1.4919 - 1.4921	82.2	17.8	1.5035 - 1.5037	86.7	13.3
1.4922 - 1.4923	82.3	17.7	1.5038 - 1.5039	86.8	13.2
1.4924 - 1.4926	82.4	17.6	1.5040 - 1.5042	86.9	13.1
1.4927 - 1.4929	82.5	17.5	1.5043 - 1.5044	87.0	13.0

* Temperature corrections: If refractometer reading is made at temperature above 20°C (68°), add 0.00023 to the refractive index for each degree C, or 0.00013 for each degree F. If made below 20°C (68°F), subtract correction. The moisture content of honey and equivalent values may be determined by any other method which gives equivalent results.

Footnotes

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3.

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Additional References:

[Colorado State Beekeepers Association](#)

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[North Carolina Honey Judging Standards](#)

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