

# HONEY COLORS

Jim Thompson

In the 1950s the United States Department of Agriculture developed the seven color classes of honey. The USDA developed a two rack device that contained the six color break points for honey and some small jars for samples, used to determine the color class. The sets of racks were accurate because they set the standard but unfortunately they contained many small pieces that are usually misplaced.

Thereafter the pfund color grader became the color authority for United States honey. It contains a triangular tray to put honey in and one can read the color thickness in millimeters. This machine is very accurate but the parts and the machine are very expensive. Due to its size, it is primarily a laboratory type instrument.

The Lovibond Color Comparator has several models; two are used by honey judges. The early model had 10 mm cells. It is a portable machine similar to a view master and considered to be accurate. The down side of this machine was that it was also expensive and the additional glass cells were \$30 each when available. On the positive side only a small amount of honey is used in the sample. The later Lovibond Color Comparator is a 33 mm machine. This means that the glass gauging disc is calibrated for the thickness of the 33 mm's cells. The honey used in the sample is three times greater and the accuracy is the same as the early model. Many judges have a practice of holding the gauging wheel against the Gamber Classic Jars or the Queenline jars to get a color approximation, compromising the accuracy.

Another color comparator that is available is the Jack Scale. You fill a white plastic container with 10 mm of honey and move it around the colored sheets on a white background. You must position yourself directly over the sheets and use it in a well lit area. Its accuracy depends upon the skill of the operator and is an inexpensive way to check the honey's color.

There is a digital machine that will analyze the color of the honey and will give you a millimeter reading. It seems to be accurate but is expensive. It uses glycerin to zero the machine, thus you may need to find a source for glycerin if you plan to use the machine on several different days. I find that it is best to keep a vial of glycerin on hand to zero between readings. If the machine is not used constantly, it will turn itself off.

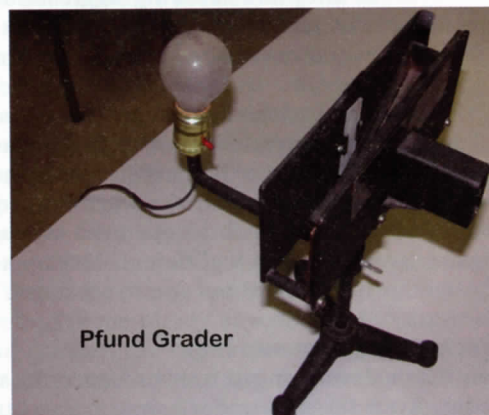
In 1985, I developed a color grading system using six jars, corn syrup, and the two Karo syrups, light and dark. The jars were in one pound Queenline jars. I used a Pfund color grader and mixed the syrups to equal the break points between the color classes. Then the hobbyist beekeeper could compare his/her honey sample to these "standards." Obviously this test was meant for an individual to get an approximation. There are many variables including the type of jars used. The color of honey in a Gamber Classic jar is lighter in color than honey in a Queenline jar. The batch of 1985 Karo syrup may be different in color than 2011 Karo syrup or other brands. There is a skill acquired by an individual to decide on whether their sample is lighter or darker than the test jar. I have stressed many times that these jars are an approximation in color. However different individuals have built light boxes that

allow an individual to put their honey jars next to the test jars. It gives an immediate color test without pouring or dipping honey samples.

Several large honey shows have adapted this color grading system. The people in charge of the shows have gone to this system to allow them to enter the honey samples



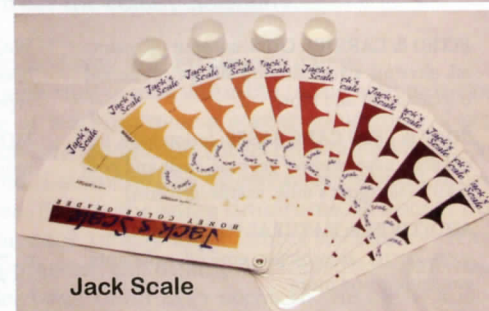
USDA Model



Pfund Grader



Lovibond Color Comparator



Jack Scale



Digital Scale

Color Break Points	Pfund reading	Lovibond 10 mm	Jack Scale	Hanna Digital
8	8	Approx. 7	7.5	12
17	17	17	35	25
34	34	34	47.5	33
48	48	48	65	49
83	83	83	90	78
114	114	114	117.5	110

into the proper classes quickly. In using this system there needs to be a change in fair rules. First, an exhibitor may only enter their honey in the proper class according to the test jars. Second, the fair rules should prohibit the judge from checking the honey with some other type of color testing device. Gone would be the days where an exhibitor would be allowed to enter the same color sample in each class. When the exhibitor was in the wrong color class, they would simply lose points.

Another eye opener in the color reading devices has been finding that the different color testers do not correspond completely.

You would expect the Pfund readings and the Lovibond 10mm readings to be fairly equal because the syrups were mixed to match. It is not so surprising to see the variation in the Jack scale as it is very difficult to match a liquid color to a printed color. The digital readings are interesting as they are close in most cases to the other readings.

There are differences when the sample tested is warm or cold. Another variable in the difference of colors is just how full the dark measuring cups were filled? Do you allow 1/32th " at the top to allow pouring, or do you fill the cups to the top and risk spilling? Originally it was thought that the syrups would change color over time. The 1985 sample still looks good color wise today in 2011. However, there has been some top mold on one of the jars.

I made a completely new set of

break point jars using 2011 Karo Syrups. The dark syrup measured less than the 1985 syrup. Therefore you would expect the mixtures to be slightly different. This time I used Gamber Classic one pound jars. I found that the mixture of syrups had a wispy appearance when cold. By heating the jars in a microwave for 35 seconds, the warmed jars could be shaken and mixed thoroughly. Some of the mixed syrup jars had to be altered to get them back into the proper color spectrum.

**Jar One**, determines the break point between Water White and Extra White honey and contains corn oil straight from the Wesson jar. It appears that other brands of corn oil are the same but you should stay away from vegetable oil, peanut oil, canola oil, and other oils as those oils were not tested. This jar lid should be marked 8 mm.

**Jar Two**, is the break point between Extra-White and White and should be marked 17 mm. The original mix was 1/4 cup of dark syrup and filled to the middle of the neck ring with light syrup. It was too dark so 1/4 cup of the mix was removed and more light syrup added. It was still too dark so another 1/4 cup of the mix was removed and the level was again brought to the neck ring. The final mix read 17 mm on the Lovibond and 25 on the digital color analyzer.

**Jar Three**, is the break point between White and Extra Light Amber and should be marked 34 mm. The mix for this jar should have 1/3 cup of dark syrup the rest being light

syrup.

**Jar Four**, is the break point between Extra Light Amber and Light Amber and should be marked 48 mm. Add a 1/2 cup of dark syrup and fill the rest of the jar with light syrup. The result is slightly dark so three teaspoons of the mix could be removed and light syrup added to the jar.

**Jar Five**, is the break point between Light Amber and Amber and marked 83 mm. This jar contains a 50% dark and 50% light syrup mix. Another way to make this jar is to add 2/3 cup of dark syrup and 2/3 cup of light syrup. It appears to be 83 mm in the Lovibond grader but measures 78 mm by the digital analyzer.

**Jar Six**, is the break point between Amber and Dark Amber and the jar should be marked 114 mm. This jar is filled entirely with dark Karo syrup. The 1985 Karo syrup was slightly darker than the 2011 syrup but appears the same on the Lovibond grader. Remember if you can't see through the jar because of its color, it must be dark amber.

Your six test jars should be checked for their accuracy of the mm. measurement against a Pfund color grader or a Lovibond Grader. Once they are found to be accurate they can be a valuable measuring tool.

To build a light box, I recommend that the show classes be reviewed. If the show has only three honey classes, a light box that contains the proper two test jars and room for a sample jar on each side would be sufficient. You should have abundant space for five jars.

Whereas the show that has seven classes of honey would need a light box that would hold 13 jars or two smaller light boxes for the portability factor. Use incandescent bulbs in the lighting because fluorescent light doesn't yield a natural color. The bulbs should be behind a translucent diffuser and have plenty of ventilation. The case should be painted white for light reflection. The wattage of the bulbs will be determined by the number of bulbs across the unit and the height of the cabinet. Several appliance type bulbs may be better than one or two 100 watt bulbs. You may consider a separate box to hold the test jars while transporting. **BC**

*Jim Thompson gets out of the kitchen enough to be a Honey Judge, and Honey Judge Teacher.*

