



Magnetic 100 Hue Color Test Guide

Part Number: 730034

Introduction

Magnetic Farnsworth F100 Hue Tests For Congenital and Acquired Color Vision Defects - Color Discs, developed in the 1940's

The Farnsworth-Munsell 100 Hue Test examines hue discrimination ability and is intended for use in vocational and diagnostic applications. The Farnsworth 100 Hue test has been shown to be useful in classifying those with normal color vision into above-average, average and poor hue discrimination. Research studies have recommended that practitioners administer a battery of color vision tests to identify people with color vision defects rather than rely exclusively on the Farnsworth 100 Hue test. However, the Farnsworth 100 Hue test remains the most comprehensive color vision test.

The test result is based on a total error score. Using the Farnsworth 100 Score Template available for download on good-lite.com, the patient's arrangement of the 100 Hue discs is entered and errors are scored. Hue discrimination ability is estimated from the total error score and the type of color deficiency is determined from the graphical representation of the results. Characteristic 100 Hue plots for congenital protan, deutan and tritan defects show concentrations of errors in well-defined positions nearly opposite in the polar diagram representing the circle of hues.

Results can be graphed using other methods, which are described in various scholastic research papers referenced at the end of this guide.

We have developed the Magnetic Farnsworth 100 Hue packaging in order to eliminate errors due to smudged or damaged discs. Because the Magnetic versions are sealed, they also prevent loss of chips. The Magnetic version makes the test seem more like a game for pediatric applications thus improving the performance of a younger aged patient.

Contents

Each Magnetic 100 Hue Color Test set consists of four sealed acrylic cases which includes the following color discs:

Case 1 = 24 discs

84 85 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

Case 2 = 23 discs

21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
41 42 43

Case 3 = 23 discs

42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61
62 63 64

Case 4 = 23 discs

63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82
83 84 85

Note: The first two discs of each case are duplicated from the previous case.

Storage

The Farnsworth 100 Hue test should be stored in a cool dry place. **Since exposure to light will affect the color discs, the set should be stored in its black protective storage bag to protect from light.**

Do not immerse. To clean the Abrasive Resistant clear top use glass cleaner sparingly and a soft cloth. Do not use any paper products.

Test Environment Lighting

The test is intended to be administered on a black background to prevent surroundings from affecting the color perception by the patient. Further, it is very important to administer these tests under consistent conditions so that each subsequent retest over time can be judged properly. The illumination should provide approximately 6280° Kelvin at 25 foot-candles or greater (Illuminant C) or daylight. Good-Lite's Color Test Daylight Illuminator (612600) provides the recommended illumination and a flat tray directly under the light for optimum illumination.



The Good-Lite Color Test Daylight Illuminator (612600) comes with Universal Power Supply adapting to any combination of 50 or 60 Hz and 110 or 220 volt

Pre-test Considerations

The examiner must determine if the test will be accomplished using binocular vision or separately for each eye. Past history of trauma, disease or potential toxicity are acquired defects that warrant monocular testing. Testing for congenital color defects is usually accomplished binocularly because monocular variations of congenital defects are rare.

The score sheet should be marked according to whether the test was monocular or binocular. The examiner should also determine



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the approximate amount of time the patient will be permitted for the test. Children over the age of 5 often can perform the test adequately.

For patients with limited dexterity, the procedure indicated where each color disc selection is placed in the corral may be altered with the patient requested to identify each selection to the examiner for 'line-up' by the examiner.

The Farnsworth F100 Hue test is not effected by mild to moderate visual acuity loss. The test is engineered to be conducted at a working distance of 19.5 inches (50 cm).

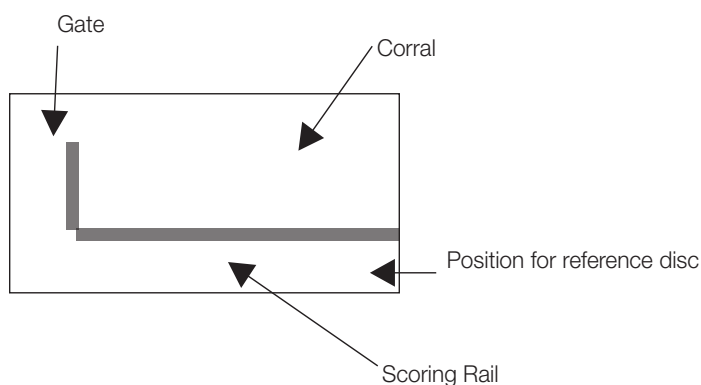
For low vision patients, an abbreviated test, the Farnsworth D-15 Color Test, comes with color discs that are increase by almost three times in size, is available from Good-Lite® (730022).

Testing Procedure

Note: The case number is determined by the chip sequence it contains when viewed from the back as defined above.

Start with Case Number 1(disc numbers 84,85 1-21).

Remove the box from its protective storage pouch. Lay the pouch out flat and use it as the black background surface. Holding test with disc colors facing up tilt the box to move all the discs into the corral area of test box (see diagram). Tilt the box to insure that the discs are mixed up and separated from each other somewhat. Set test box on the black pouch in front of patient. The examiner can now demonstrate how the magnetic pen is used to move the chips. (For younger patients, you may want to let them practice moving the color discs using the magnetic pen to give them familiarity with the technique). The examiner should then select the reference disc (with the white dot) and move the reference disc to the starting position in through the gate of the corral along the rail to its end.



When ready, instruct the patient to select the color disc that most closely matches the reference disc. Have the patient position his selection adjacent to the reference disc. The patient then continues to select the next closest color disc sliding each disc into place next to previously selected disc until all discs have been selected. The patient should be given a reasonable time to arrange the discs and may be permitted to alter the sequence prior to

completion; however, the total test time should be about 2 minutes and should not be unlimited.

At the completion of the test for Case 1, the test is then repeated for each of the other three cases in numbered sequence.

Scoring

Scoring for each case is accomplished by reading the color chip numbers on the reverse side of the case through the clear bottom and recording the sequence selected by the patient on a copy of the score sheet. The final page shows a sample of the Good-Lite® Farnsworth 100 Hue Score Template.

Note: Be careful when inverting the case in order to insure that the chips do not fall out of the channel. The last disc of each case is repeated as one of the reference discs in the next case, but is not rescored.

To determine a score and obtain a graphic representation of the outcomes, you may choose to use the Farnsworth 100 Score Template available on good-lite.com.

Farnsworth 100 Score Template

The Farnsworth 100 MS-Excel Scoring template found on our website is used to build an analysis of the scores for each patient.

1. [Download file from web under P/N 730024](#)
2. [Create Patient File:](#)

From the 'Explore' application, create a folder with the patient's name (such as DoeJohn02). From Excel, go to 'File', then 'Save as' then use the dialog box to find the patient's folder. In the 'Save as' dialog box, change the 'Save as type' to "Microsoft Excel Workbook".

Note: Changing the file type to 'Microsoft Excel Workbook' is a very important step to insure that the patients results are uniquely saved under that patient's name.

Complete the 'Save as' process giving the file the name of the patient and date (or whatever convention you have chosen. For example, use "DoeJohn092102" as the file name in the folder entitled "DoeJohn02").

3. [Enter the Patient's Name and Scores](#)

Back in the Excel application, click on the cell with the words "Enter Name Here" and type over this entry the actual name of the patient. Repeat this for the cells entitled "Enter Date of Exam" and "Enter Tester's Name".

Now, from the handwritten score sheet or the actual cases, enter the 'Actual Disc' selection by the patient in the appropriate cell (likely cell C8). Enter the other selections in the column titled 'Actual Disc'.

Note: From the beginning, the column titled "Error Score" will have entries. As the Actual Disc selections are entered, Excel will automatically calculate the correct "Error Score" and place that



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result in the proper column.

4. Save the Patient's Scores:

At the completion of the patient's selection entries, go to 'File', and then 'Save' to insure that the entries have been archived.

5. Printing the Patient's Results:

Across the bottom of the Excel window, click on the tab entitled 'Patient Report'. Review for Patients name and other pertinent data, then print. This page shows the Patient's name, test data, disc selections, line by line calculated scores and the total score.

Now, across the bottom of the Excel window, click on the tab entitled 'Print Chart'. Review for Patients name and other pertinent data, then print. This page shows the patient's name, and a graphic charting of the patient's scores with the Protan, Deutan and Tritan lines pre-marked.

Interpretation of Results

Interpretation of the error scores and graphic charting of the patient's scores is left to the physician. The appendix provides a list of textbooks and other materials, which can be used to develop a method of interpretation.

Retesting

As opposed to the D-15 test, which is a much shorter test to administer, retesting with the Farnsworth 100-hue test in the same session often yields somewhat different scores and is not deemed reliable.

Interpretation of Scores

Consultation of a textbook on this subject is suggested.

Replacement and Optional Parts

P/N	Description
443300	Replacement Color Discs (Specify Farnsworth 100 Hue Case number and disc number)
443600	Farnsworth 100 Hue scoring card (8 1/2" by 11" or 22 cm by 28 cm)
477900	Clear ABS Plastic Replacement Case for 24 Discs for Farnsworth 100 Hue set
478000	Black Plastic Tray with Lid to hold 4 P/N 477900 Cases for Farnsworth 100 Hue



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Appendix A

Sample Good-Lite Farnsworth 100 Hue Score Sheet

Note: The last disc of each case is repeated in the next but is not scored.

FARNSWORTH 100 HUE SCORE SHEET

(Make a copy and use the copy)

Good-Lite P/N 443600

Name: _____

Date of exam: _____

Tester: _____

Case 1	85=0
Disc #	Actual Disc #
85	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	

Case 2	Disc #	Actual Disc #
	22	
	23	
	24	
	25	
	26	
	27	
	28	
	29	
	30	
	31	
	32	
	33	
	34	
	35	
	36	
	37	
	38	
	39	
	40	
	41	
	42	

Case 3	Disc #	Actual Disc #
	43	
	44	
	45	
	46	
	47	
	48	
	49	
	50	
	51	
	52	
	53	
	54	
	55	
	56	
	57	
	58	
	59	
	60	
	61	
	62	
	63	

Case 4	Disc #	Actual Disc #
	64	
	65	
	66	
	67	
	68	
	69	
	70	
	71	
	72	
	73	
	74	
	75	
	76	
	77	
	78	
	79	
	80	
	81	
	82	
	83	
	84	