Farnsworth F100 Hue Test Guide

Part Number: 730024

Introduction

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.

Contents

Each Good-Lite Farnsworth 100 Hue Test set consists of:

- 93 colored discs arranged in four rows (numbered on the bottom) Four (4) Clear ABS Cases (with tops)
- ABS Black Plastic Tray with Lid to hold the Four Cases
- Farnsworth F100 Test Guide
- 100 Hue Score Sheet

The four cases include 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. **The set should be kept wrapped in the shipping container or other enclosure to protect from light as exposure to light will affect the color discs**

Precautions

Each color disc is mounted without any protection of the color sample to insure correlation to other color tests. Consequently, it is very important to insure that no one touches the color sample to avoid the damage of fingerprints. This is the reason that it is very important that the examiner and the patient wear some sort of protection of the fingertips.

Individual color discs that become dis-colored or smudged can be replaced as needed. See the section entitled 'Replacement Parts' below.

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

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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 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 indicate each selection for 'line-up' by the examiner. It is important that the patient be able to view the 'line-up' as it builds for review.

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

The test procedure that follows is to be used in conjunction with the Farnsworth 100 Score Template available on good-lite.com for Scoring. If using this scoring method one duplicated disc from each case must be re- moved. From Case 1 remove number 22, Case 2 remove number 43, Case 3 remove number 64 and Case 4 Remove number 85. Save these removed discs as other scoring methods my require use of these duplicated discs.

Start with Case Number 1.

Remove the sliding top to one of the Plexiglas Cases, tip one end of the case and carefully slide all of the color discs onto a black surface. The examiner then selects the first reference disc (# 84 in Case 1) and places the disc into the appropriate Plexiglas Case to the end. The examiner then mixes up the remaining discs(color side up) before beginning the test. The patient is then ordered to select the color disc from those remaining which most closely matches the reference cap and slide it into the Plexiglas Case next to the reference cap.

The patient then continues to select the next closest color disc and places each in sequence in the Plexiglas Case. 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 time should be about 2 minutes per case and should not be unlimited.

At the completion of the test for Case 1, the examiner should slide the lid into place to secure the test discs.

To open the ABS clear plastic box, press the circular label in the center of the top and lift up one end. Keeping the top and bottom together (but still open) tip the color discs into the top so they are upside down.

Now tip the top (with the discs) onto the surface selected for the test. It is recommended that the surface be black in color. The examiner then selects the reference cap (# 84 in Case 1) and places that cap into the box bottom, to one end. Wearing gloves, the patient is then ordered to select the color disc, which most closely matches the reference cap and place in the bottom of the box and slide next to the reference cap.

The patient then continues to select the next closest color disc and places each in sequence in the bottom of the box. 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 time should be about 2 1/2 minutes and should not be unlimited .

At the completion of the test, the examiner should slide the lid into place to secure the test chips.

The test is then repeated for each of the other three cases.

Scoring

Scoring for each case is accomplished by reading the color chip numbers on the reverse side of the case through the clear ABS box and recording the sequence selected by the patient on a copy of the score sheet. Attachment 1 shows a reduced sample of the Good-Lite® Farnsworth 100 Hue Score Template.

Note: 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 which is enclosed.

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").

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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 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	