

Roth 28 Color Test Instructions

Version 1.3 (05/11)



Introduction

Roth 28 Color Test For Congenital and Acquired Color Vision Defects

The Roth 28 Color Test is used to examine hue discrimination ability and is intended for use in vocational and diagnostic applications. The Roth 28 test studies the characteristic axes of dyschromatopsia similar to the Farnsworth D15, however this 28 hue test provides higher sensitivity since there are additional color choices. The Roth 28 is a subset of the Farnsworth-Munsell 100 Hue test. This Farnsworth 100 Hue test remains the most comprehensive color vision test. The Richmond Products Roth 28 test comes with a transparent case to make scoring more readable.

The test result is based on a graphical representation of the patient's selection. The Roth 28 product kit includes the Roth 28 Template for Scoring. The template provides plots for congenital protan, deutan, tritan, scotopique and tetartan defects.

The Roth 28 and other color tests are described in various scholastic research papers referenced below.

Contents

Each Richmond Products Roth 28 Hue Test set consists of:

- 28 colored discs (numbered on the bottom)
- One (1) case
- Powder free non-latex gloves
- Roth 28 Color Test Instructions
- Roth 28 Score Sheet (laminated)

The Roth 28 following color discs are numbered:

1,4,7,10,13,16,19,22,25,28,31,34,37,40,43,46,49,52,55,58,61,64,67,70,73,76,79,82

Note: The disk number correspond to their Farnsworth 100 Hue sequence.

Storage

The Roth 28 test set should be stored in a cool dry place. **Since exposure to light will affect the color discs, the set should be kept wrapped in the shipping container or other enclosure to protect from light.**

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 fingers. Powder free non-latex gloves are furnished for this purpose. Replacements can be re-ordered as P/N 4922R Gloves, Non-Latex, Lightly Powdered, (4 Packages of 10 Gloves).

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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 6700°Kelvin at 25 foot-candles or greater (Illuminant C) or daylight. Richmond Daylight Flat Tray Illuminator (P/N 4757R for 115v or 4758R for 220 Volt) or Daylight Illuminant C Glasses (P/N 15115x) all provide acceptable illumination.

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 warrants monocular testing. Testing for congenital color defects is usually accomplished binocularly because monocular variations of acquired 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 Plexiglas box may be altered with the patient requested to give each selection to the examiner for 'line-up' on the table. It is important that the patient be able to view the 'line-up' as it builds for review.

The Roth 28 color 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 Pediatric set, with color discs that are increase by almost three times in size, is available from Richmond Products (P/N 32601). Ask for the Large Stimulus Pediatric Farnsworth Equivalent.

Testing Procedure

First, open the case and the examiner should select the reference cap (#1) from the box. Then tip one end of the box and carefully place the remaining color discs onto a black surface color side up. Place the #1 cap into the Plexiglas box. The examiner then mixes up the remaining discs before beginning the test. The patient is then instructed to select the color disc from those remaining which most closely matches the reference cap and places it into the Plexiglas box next to the reference cap.

The patient then continues to select the next closest color disc and places each in sequence in the Plexiglas 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 minutes for the test and should not be unlimited.

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

Scoring

Scoring for each case is accomplished by reading the color chip numbers on the reverse side of the case through the clear Plexiglas bottom and recording the sequence selected by the patient on a copy of the score sheet. Attachment 1 shows a reduced sample of the Richmond Roth 28 Score Sheet.

A patient with a color vision deficiency will arrange the color discs in a different order than a person with normal color vision.

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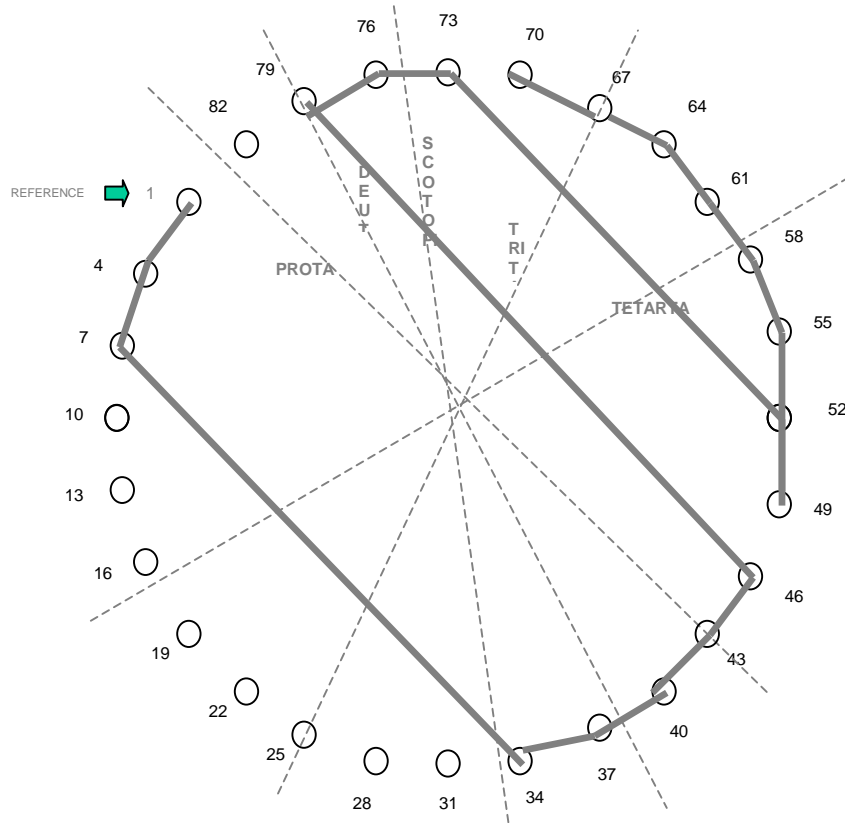
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The patient's selection of the discs is diagramed on a copy of the score sheet template by connecting the dots in the order selected by the patient. For example, if the patient's selection order was 1,4,7,34,37,40,43,46,79,76,73,52,49,55,58,61,64,67,70, the scoring would look like this:



If the lines remain along the outside of the circle (few chips out of order) then the patient is deemed to be 'normal' or very mildly color deficient. If the sequence lines cross the center repeatedly, the patient has a medium or strong defect. The type of defect is determined by comparing these crossover lines to see if they are parallel to the protan, deutan, scotopique, tritan or tetartan color confusion axes (see below). Confusions occurring regularly in a certain direction across the score sheet reveal the type of color defect.

Confusions among color discs that are close together are not considered significant. Some examiners consider that one or two crossings are normal. Some examiners consider confusion crossing from color disc # 1 to #82 to 4, as an example, to be insignificant as these are so close in hue.

Interpretation of Results

Interpretation of the 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.

Interpretation of Scores

Consultation of a textbook on this subject is suggested.

Replacement and Optional Parts:

Replacement and Optional parts can be ordered from Richmond Products as follows:

Gloves

P/N 4922R Gloves, Non-Latex, Lightly Powdered, 0810-01 (4 Packages of 10 Gloves) US \$ 10.00.

Replacement Discs

P/N 4433 Replacement Color Discs US\$ 25.00 each (Specify Farnsworth 100 Hue Case number and disc number)

Laminated Score Card

P/N 4507 Laminated Roth 28 scoring card (8 ½" by 11" or 22 cm by 28 cm)
US\$ 19.00 each

Note: Prices subject to change without notice. Check our website at www.RichmondProducts.com for latest prices.

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Web References:

[NZHTA Report 7](http://nzhta.chmeds.ac.nz/colour.htm#screening) - New Zealand Health Technology Assessment (NZHTA) The Clearing House for Health Outcomes and Health Technology Assessment Department of Public Health and General Practice Christchurch School of Medicine Christchurch, N.Z. Colour vision screening A
<http://nzhta.chmeds.ac.nz/colour.htm#screening>

<http://orlab.optom.unsw.edu.au/ICVS/Daltoniana.April98.html>

[Procedures for Testing Color Vision: Report of Working Group 41 \(1981\)](http://www.nap.edu/readingroom/records/NI0001) - Procedures for Testing Color Vision: Report of Working Group 41 (1981)
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[Nat'l Academy Press, Procedures for Testing Color Vision: \(1981\), Table of Contents](#) - Procedures for Testing Color Vision: Report of Working Group 41 (1981) Commission on Behavioral and Social Sciences and Education (more titles from CBSSE) Related Books Openbook Linked Table of Contents Front Matter, pp. i-iv Contents, pp. v-vi

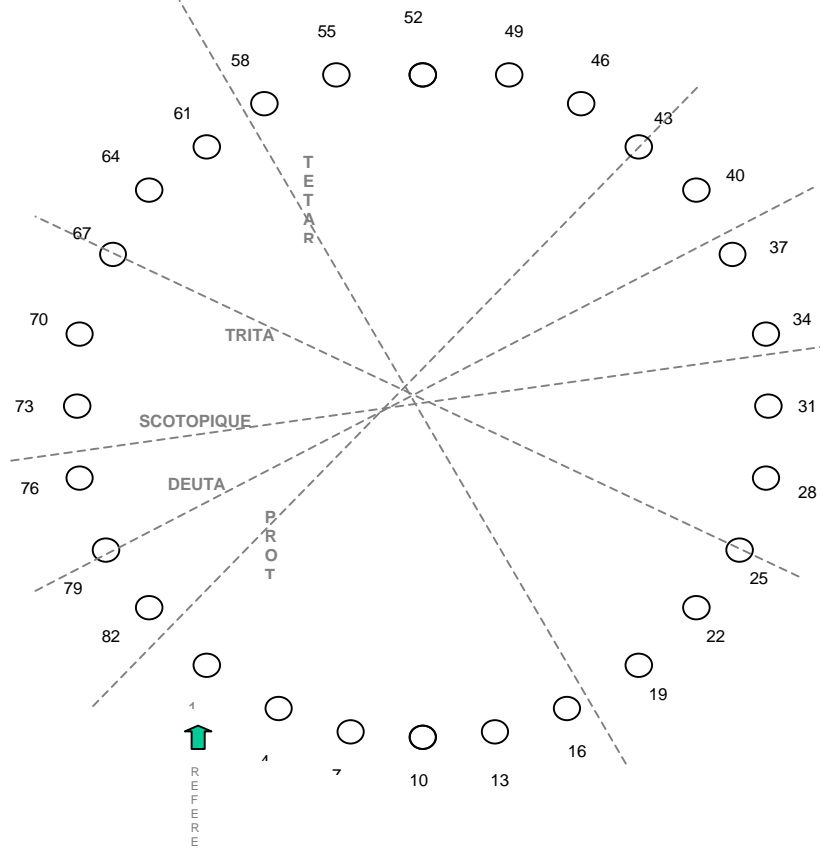
Revision History

Rev 1.1 changes from finger cots to gloves
Rev 1.2 adds flat tray illuminator notations
Rev 1.3 adds CE mark

Score Sheet Template for Roth 28 Disc Color Vision Test

Name: _____ DOB: _____ Test
Date: _____

Copy this template onto your medical history or plain paper



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Richmond Part Number