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gray reference card for dental photography

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The white_balance® gray reference card was specifically developed for the use in dental photography. A previous study recommended the use of such a card for dental photography to record color accurate images, especially for shade communication and for documentation of clinical results[1]. The white_balance® gray reference card is particularly suitable for the use of the eLABor_aid® system which was developed to enable objective shade communication between the dental office and dental lab, eliminating the need for shade guides. With your white_balance® gray reference card you are ready to capture, calibrate & create!

1 Hein S, Zangl M. The use of a standardized gray reference card in dental photography to correct the effects of five commonly used diffusers on the color of 40 extracted human teeth. Int J Esthet Dent. 2016;11:246-59.

YouTube

https://www.youtube.com/channel/UCHGV7Gmke8b_tUNXa6Hf5w

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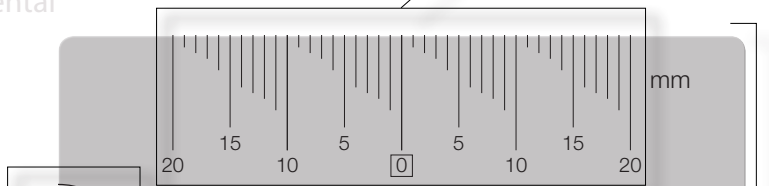
Gray reference card for perfect color management in dental photography.



Accurate millimeter scale for Digital Smile Design applications.

Aiming circle designed to match the view finder grid of most modern APS-C (large circle) and full frame (small circle) DSLR cameras.

CIE *L*a*b** 1976
L*79; a*0; b*0

Made in Germany

Width of card is equal to the average inter-canine distance of caucasian adults.

Defined color coordinates with low manufacturing tolerance (± 0.5).

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Manufactured according to DIN EN ISO 9001:2008 in Germany.

*Avoid autoclave sterilization. Use low-temperature sterilization instead.

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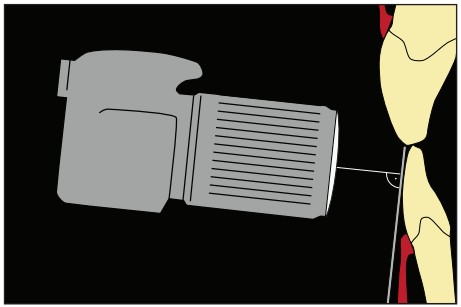
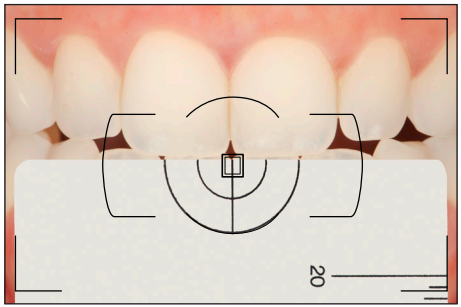
Follow these simple steps for a perfect photographic work flow.



Step 1.
Correct alignment.
Guide the patient into an edge-to-edge position and place your white_balance® gray reference card just beneath the incisal edges of both maxillary centrals, covering the labial surface of the mandibular anteriors. The camera should be perpendicular to the plane of the white_balance® gray reference card.



Step 2.
Correct framing.
Focus to capture the width of the white_balance® gray reference card which should approximately match the inter-canine distance. Make sure its mid-line aligns with the patients vertical mid-line. The maxillary centrals and the aiming circle of the white_balance® gray reference card should be positioned in the center of the image.

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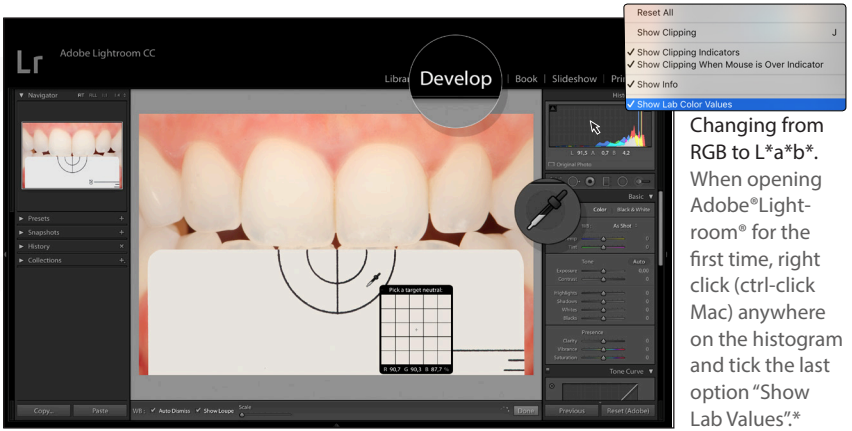
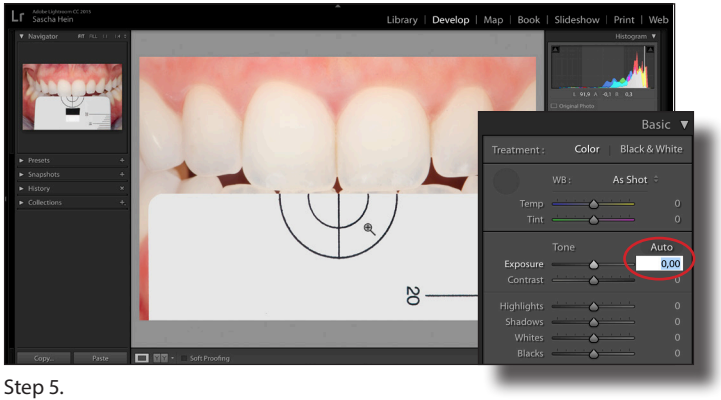
Image Processing in Adobe® Lightroom®: White Balancing.



Changing from RGB to L*a*b*.
When opening Adobe®Lightroom® for the first time, right click (ctrl-click Mac) anywhere on the histogram and tick the last option "Show Lab Values".*

Step 3.
Import your RAW images into Adobe®Lightroom®. Choose the white balance selector tool located in the Develop Mode on the right-hand side below "Treatment". Click on any of the four gray segments of the aiming circle.

*Only available in Adobe® Lightroom® vers. 5.0 or newer.



Step 4.
Click on "0.00" next to the Exposure slider underneath "Auto". This will highlight the area blue.

Step 5.
When moving the cursor over the image it will turn into a magnifying glass. Place it over any of the four gray segments of the aiming circle. Do not click, just leave it there.

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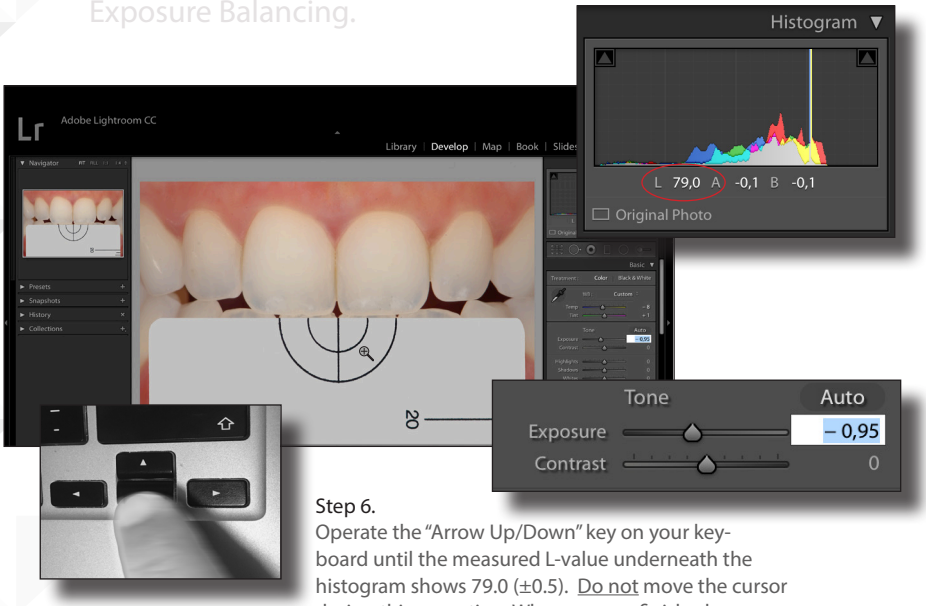
Image Processing in Adobe® Lightroom®: Exposure Balancing.



Step 6.
Operate the "Arrow Up/Down" key on your keyboard until the measured L-value underneath the histogram shows 79.0 (±0.5). Do not move the cursor during this operation. When you are finished press "Enter" to confirm.

Exposure balancing.
Your white_balance® gray reference card has known color coordinates which have been measured with a photo spectrometer. They are L*79; a*0; b*0. The purpose of the previous step and this one is to replicate these values in Adobe ® Lightroom®.

Exposure correction.
In this example the exposure correction that was needed to adjust the L value to 79 was -0.95. This value will vary each time due to variations in flash intensity.

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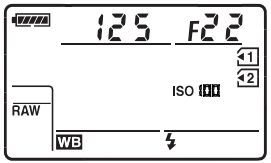
Recommended camera settings for use with polar_eyes®.



Camera Settings .
No matter if you use a Nikon or Canon DSLR camera, when using polar_eyes® and the white_balance® gray reference card, your settings should always be: Exposure Time 1/125 sec; Aperture *f* 22, ISO 100 (L 1.0 with some Nikon models) and Image Quality should be set to RAW. This will yield images of the highest tonal quality and low signal to noise ratio (SNR).

Flash Settings.
When using polar_eyes® the flash output is slightly attenuated. For this reason it is advisable to set flash intensity to 1:1 (max.) on your flash commander in the manual mode. If the resulting image is too bright and can't be white balanced in Adobe® Lightroom® decrease flash intensity to 1/2 (half) and take another picture. Figuring these one-time settings out is easy. Once this is done its best to keep your camera settings always the same.

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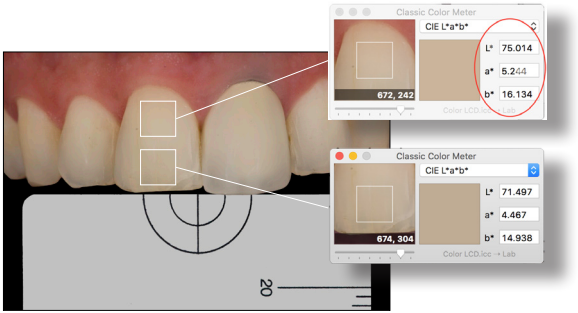
Using your white_balance® gray reference card with the eLABor_aid® System.



With your white_balance® gray reference card you are ready to measure tooth shades using the Digital Color Meter® software which is already located on your Apple Macintosh computer in the Utilities folder. It utilizes the CIEL*a*b* (1976) system to express color coordinates, whereby L* describes the amount of lightness (i.e. 76%), a* the amount of red (i.e. 5.244%) and b* the amount of yellow (i.e. 16.134%)

Official eLABor_aid® Group

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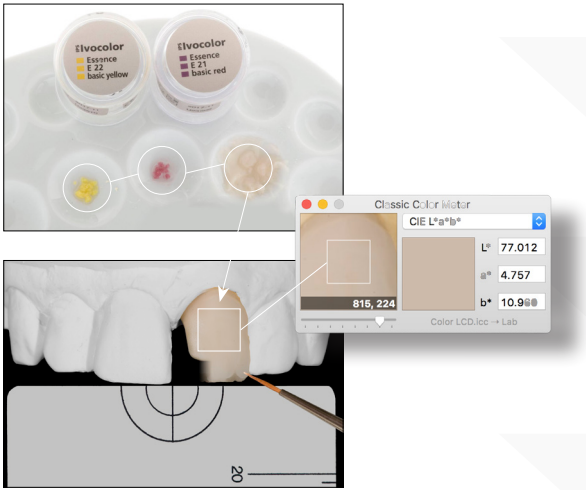
Using your white_balance® gray reference card with the eLABor_aid® System.

The L*a*b* values obtained in the previous step can then be used to formulate a specific dentin shade recipe. The use of the visual_eyes® liquid enables exact measurement of the resulting dentin shade before firing. This innovative and unique work flow allows for accurate shade reproduction without the use of traditional shade guides.



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Using your white_balance® gray reference card with the eLABor_aid® System.

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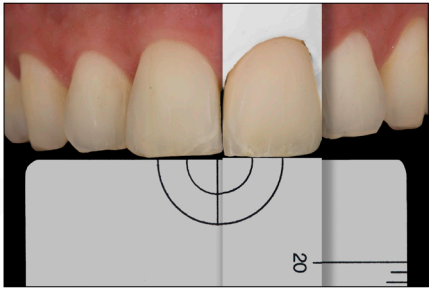

A digital try-in can be performed at any stage (i.e. before glazing) to check the predicted shade accuracy visually and numerically.

Clinical image courtesy of Dr Javier Tapia Guadix, Madrid and Dr Marleen Peumans, Leuven.

Final ceramo-metal restoration placed in situ. The eLABor_aid® system allows for predictable and reliable shade matching even over large geographic distances.


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