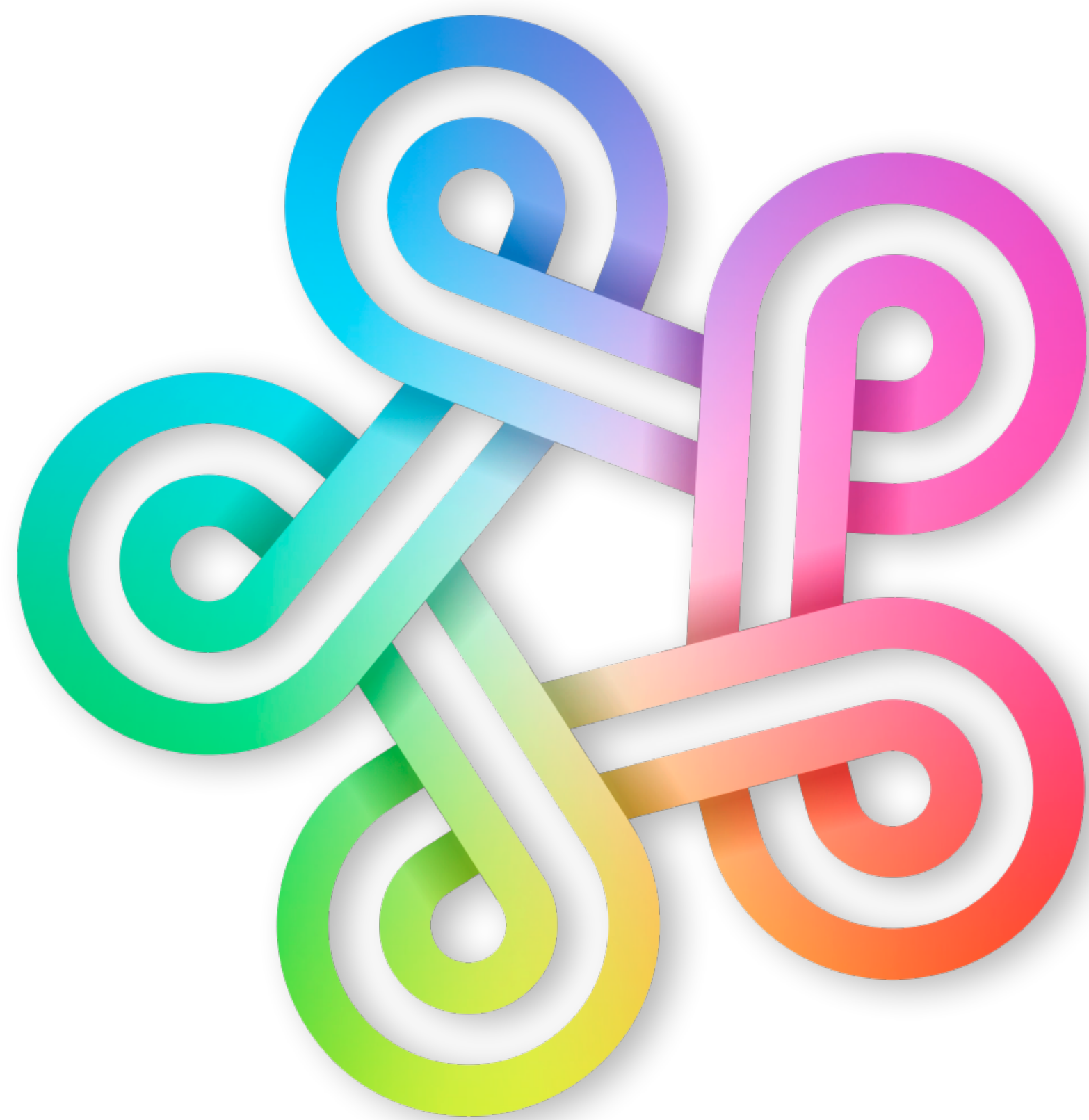




COLOR CONFORMANCE CONFERENCE '25

**New Port Richey, FL (Tampa North)
January 28–30, 2025**



COLOR CONFORMANCE
CONFERENCE '25

Measuring Glossiness

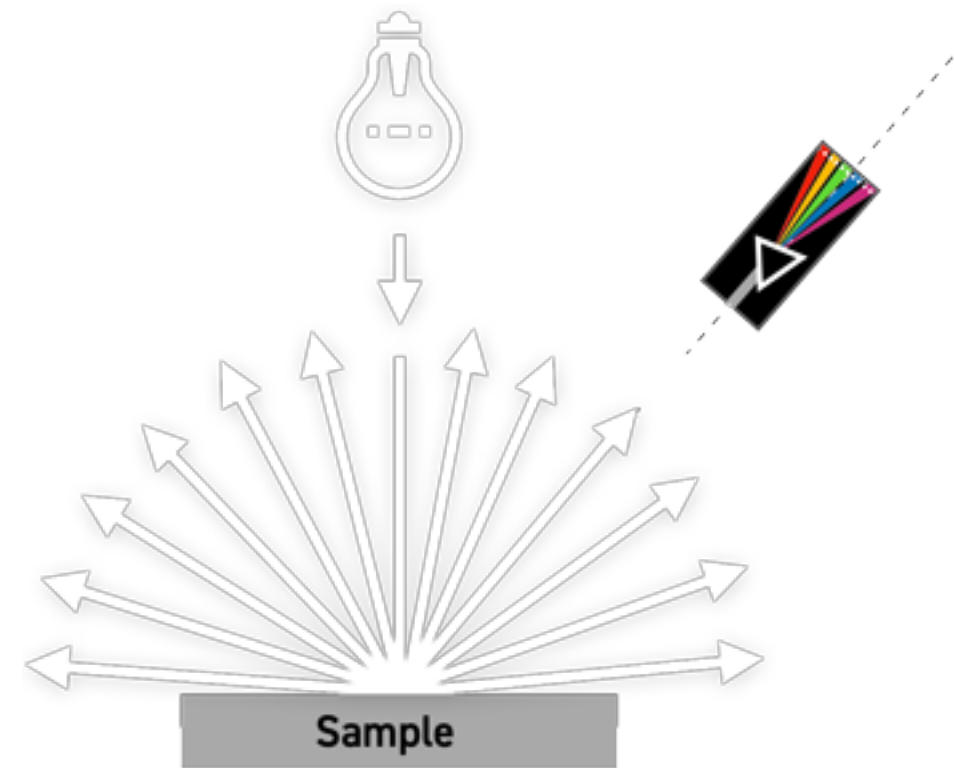
CC-380 Multi-Angle Glossmeter

January 28, 2025

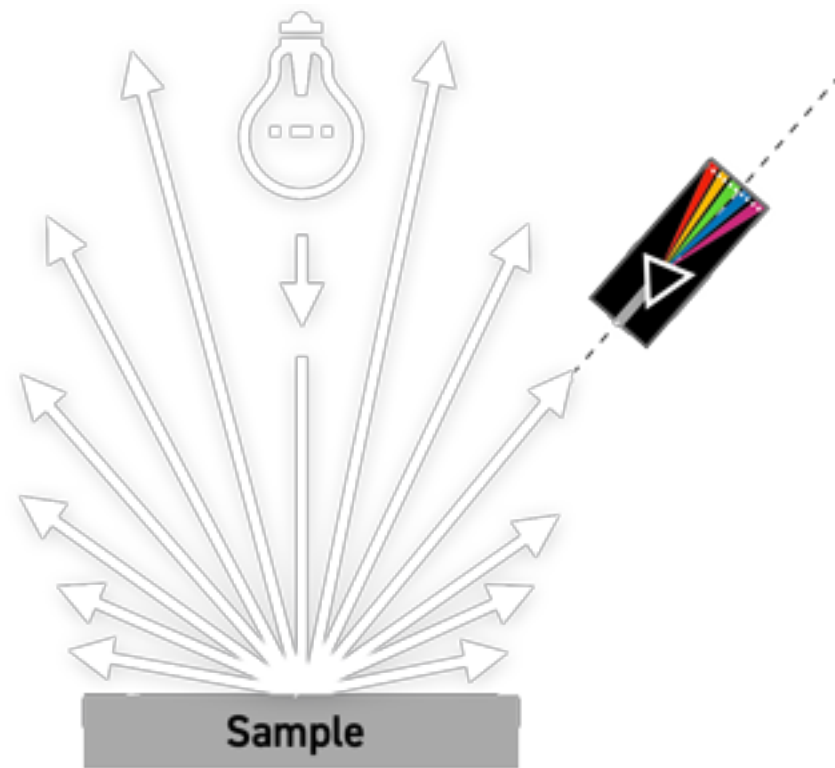
Presented by

Krzysztof Kućma

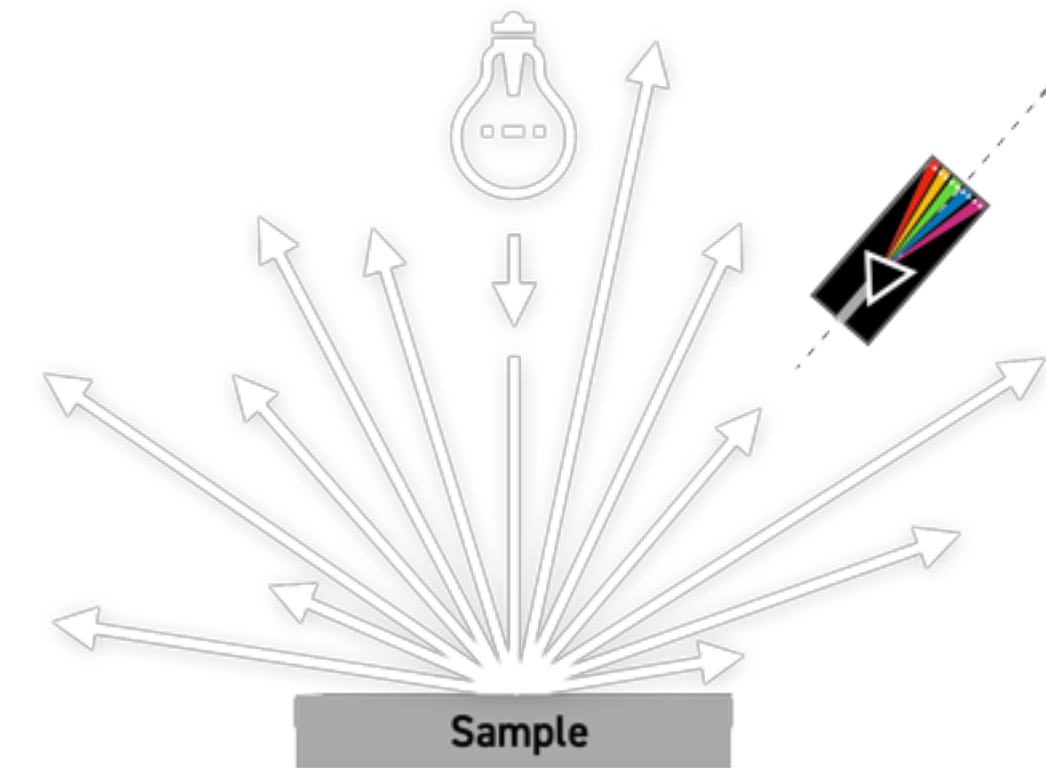
Reflection by various surfaces



Matt surface



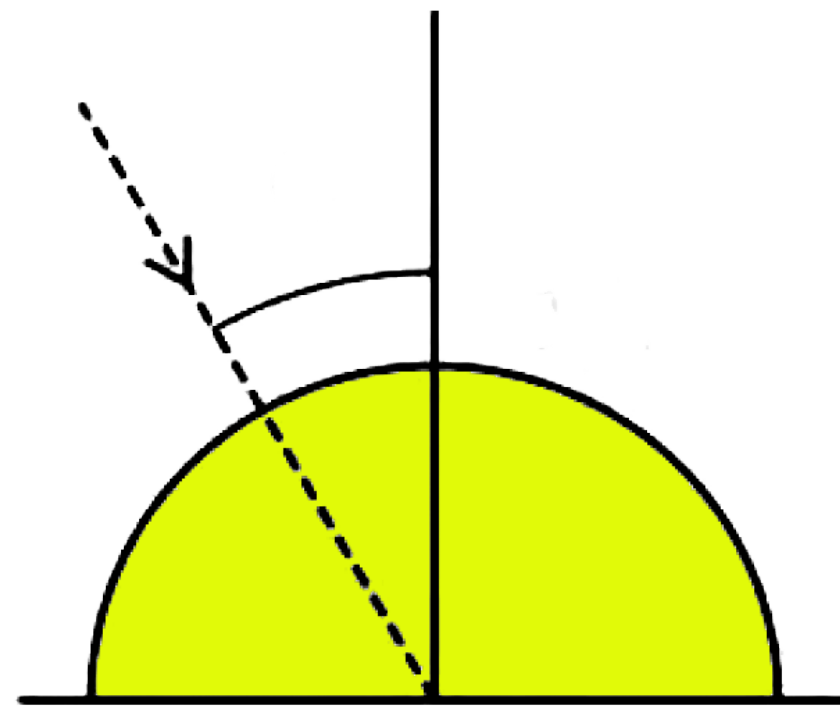
Glossy surface



Irregular surface

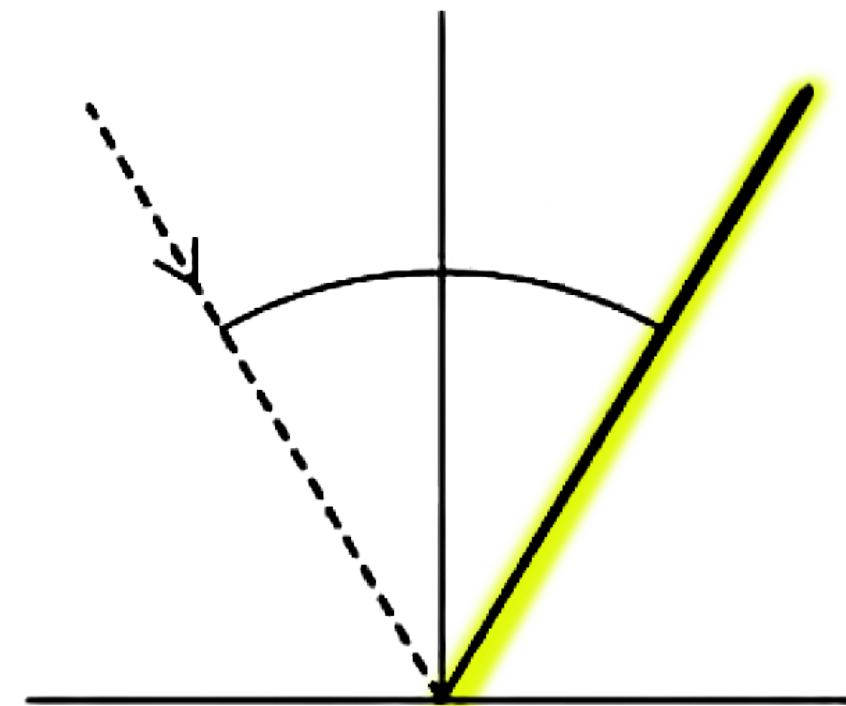
Whenever printing is performed on the metalised substrate, film, or final product has sophisticated finishing like structural varnish, or /and is calendared or/and as a result of postproduction, the final surface is not flat and matt finished — regular printing spectrophotometer may not work correctly.

Reflection by various surfaces



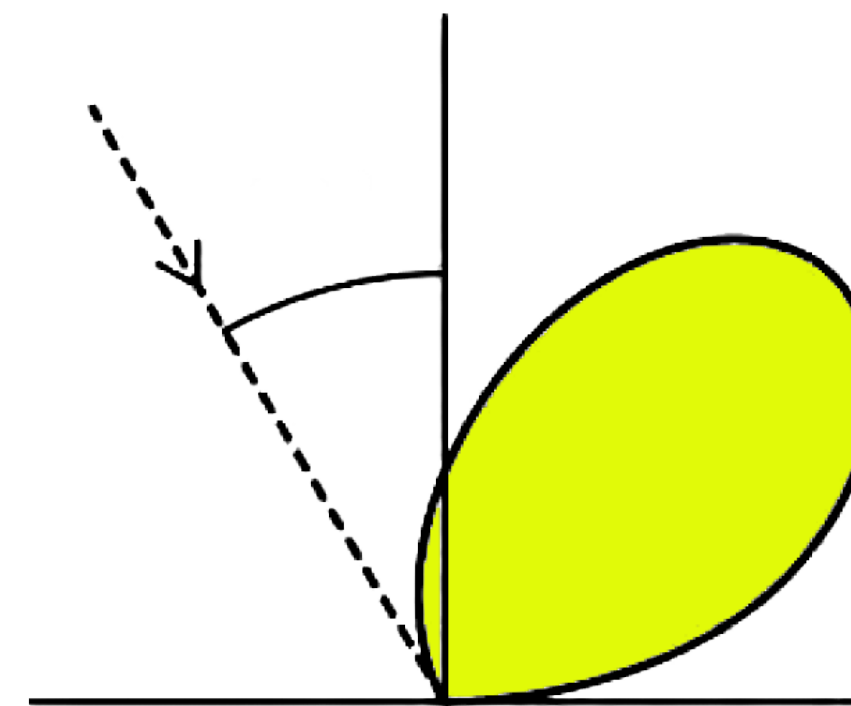
a Lambertian reflector

Lambertian reflectance is the property that defines an ideal "matte" or diffusely reflecting surface. It is theoretical model.

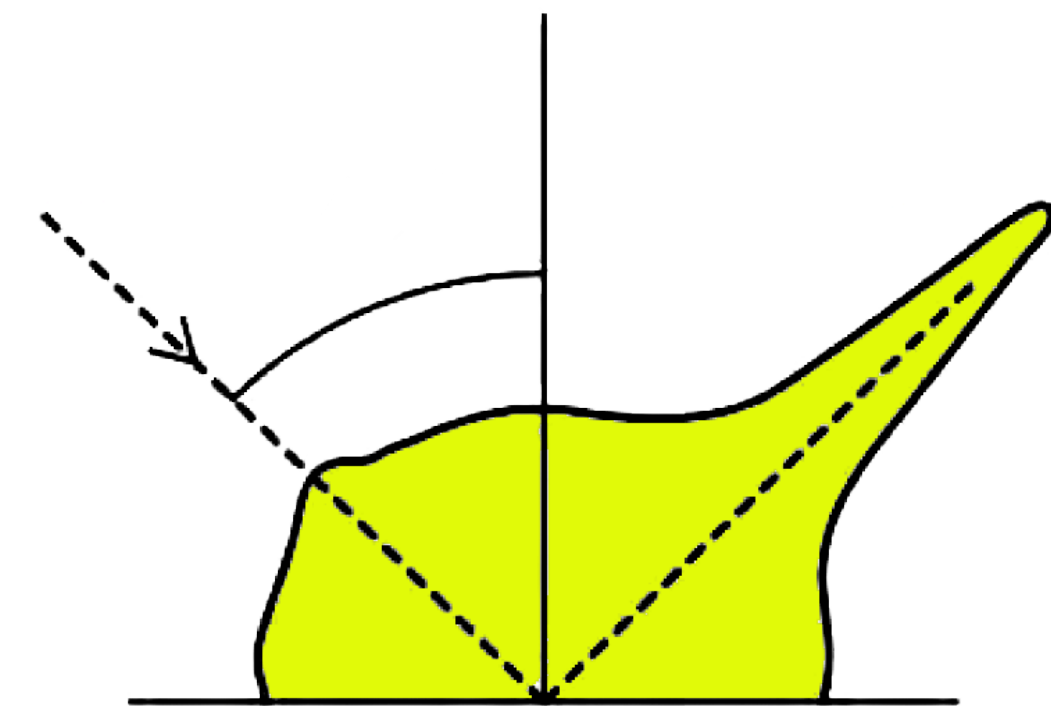


a smooth surface

mirror or perfect glossy finishing (coloured glass, piano varnish,...)



a roughened aluminum



a glossy paper

(based on: Fundamentals of Optics and Radiometry for Color Reproduction, Mathieu Hébert, Roger D. Hersch, Patrick Emmel, hal-01179588.)

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Glossiness ISO Standards

ISO 2813:2014

Paints and varnishes — Determination of gloss value at 20°, 60° and 85°

Technical Committee: [ISO/TC 35/SC 9](#) General test methods for paints and varnishes

ISO 2813:2014 specifies a method for determining the gloss of coatings using the three geometries of 20°, 60° or 85°. The method is suitable for the gloss measurement of non-textured coatings on plane, opaque substrates.

ISO 8254 Paper and board — Measurement of specular gloss

Technical Committee: [ISO/TC 6](#) Paper, board, and pulps

ISO 8254-1:2009 Part 1: 75-degree gloss with a converging beam, TAPPI method

ISO 8254-1:2009 specifies a method for measuring the specular gloss of paper at an angle of 75° to the normal to the paper surface. Although its chief application is to coated papers, it may also be used for glossy uncoated papers such as supercalendered papers.

ISO 8254-2:2016 Part 2: 75 degree gloss with a parallel beam, DIN method

ISO 8254-2:2016 specifies a photometric test method for the assessment of visual gloss by means of a reflectometer value measured at an angle of 75°. It is applicable to plane paper and board surfaces of gloss levels below 65, measured according to ISO 8254-2:2016. It should be the preferred method for paper and board surfaces of gloss levels below 20, measured according to ISO 8254-2:2016. Materials containing optical brightening agents may be measured.

ISO 8254-3:2016 Part 3: 20-degree gloss with a converging beam, TAPPI method

ISO 8254-3:2016 specifies a method for measuring the specular gloss of paper and board at an angle of 20° to the normal to the paper surface. It is applicable chiefly to highly glossy surfaces, such as cast-coated, lacquered, highly varnished or waxed papers and high-gloss ink films.

NOTE This part of ISO 8254 has been developed from TAPPI T653[2], ISO 2813[1] and from ISO 8254-1.

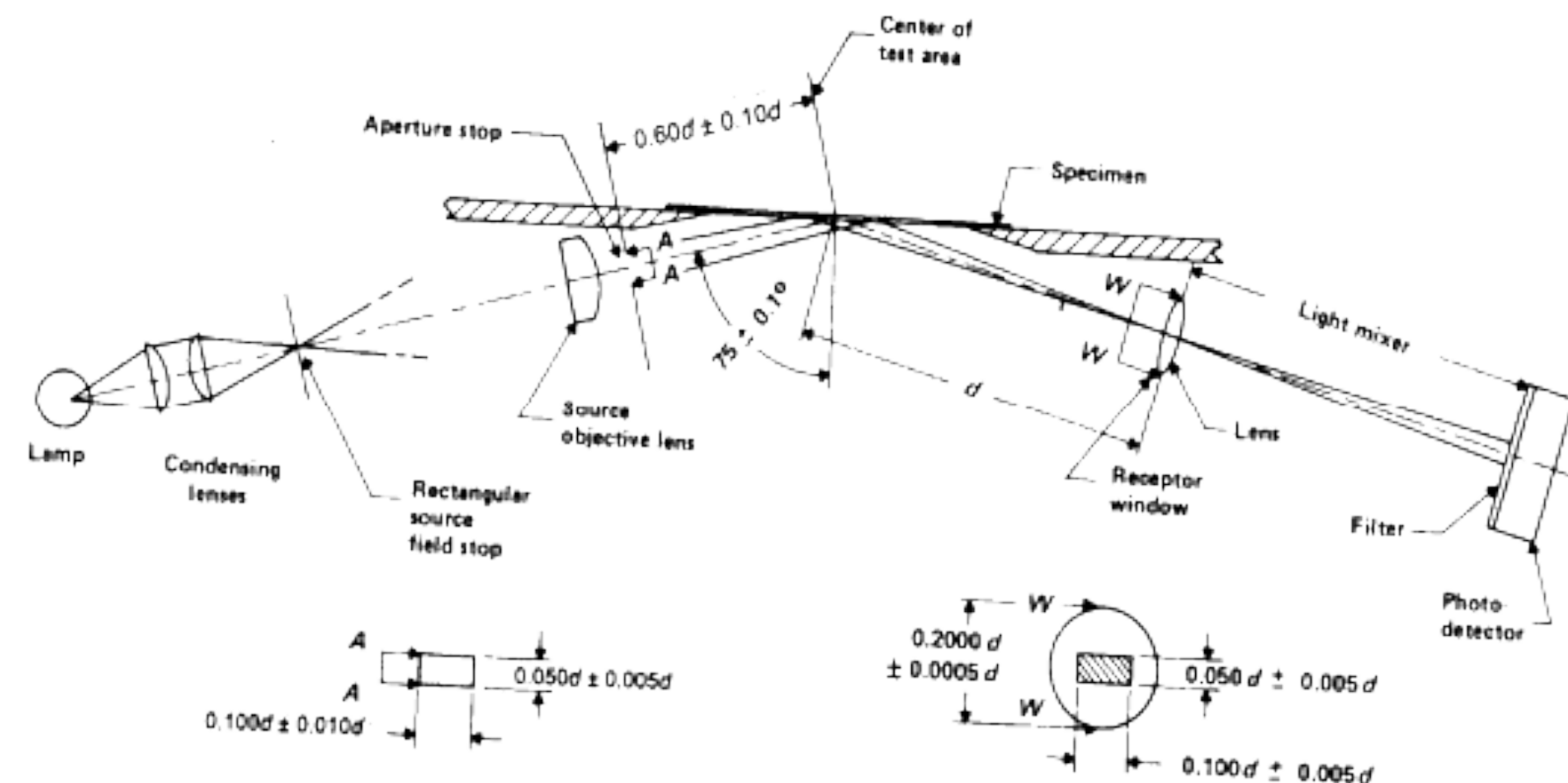
TAPPI T 480

This standard specifies "Specular gloss of paper and paperboard at 75 degrees"

The TAPPI T 480 is for measuring the specular gloss of paper at 75° (15° from the plane of the paper). Although its chief application is to coated papers, it is also used for a variety of uncoated papers.

This method is suitable for **low- to high-gloss** papers. For **very high-gloss** papers such as cast-coated, lacquered, highly varnished or waxed papers, and high-gloss ink films, **TAPPI T 653 "Specular Gloss of Paper and Paperboard at 20 Degrees"** is preferred.

It should be known that the very specific measurement geometry defined by the T 480 standard is very well defined and is not limited only to the angles but also to a number of other parameters critical for the correctness of the measurements.



The diagram is quoted for a general explanation of the specificity of the measurement and to understand the impossibility of replacing this method with another measurement device.

T 480 has been shown to be suitable for gloss measurements of most ink films on paper or paperboard. Differences in the color and diffuse reflectances of these ink films have a negligible effect on measured gloss. For example, when white and black surfaces which are otherwise identical are tested, the white surface will measure less than one gloss unit higher than the black. This method does not measure image-reflecting quality.

CC s30 Triple Angles Gloss Meter

Gloss meters are mainly used to measure the surface gloss of paint, plastic, metal, ceramics, building materials, and so on.

CC-380 conform to the DIN 67530, ISO 2813, ASTM D 523, JIS Z8741, BS 3900 Part D5, and JIG696 standards.



Technical Specification

CC-380

Test Angle: 20°, 60°, 85°

Test light spot (mm): 20°: 10 x10 • 60°: 9 x15 • 85°: 5 x 38

Test range: 20°:0-2000GU • 60°:0-1000GU • 85°:0-160GU

Stability: 0.1GU

Repeatability: 0-100GU: 0.2GU • 100-2000GU:0.2%GU

Accuracy: Conform to JJG 696 standard for first-class gloss meter

Test time: Less than 1s

Data storage: 100 standard samples; 10000 test samples

Size(mm): 165*51*77 (L*W*H)

Weight: About 400g

Language: Chinese and English

Battery capacity: 3000mAh lithium battery

Port: USB, Bluetooth (optional)

Working Temperature: 0-40°C

Working Humidity: <85%, no condensation



CC Capture Integration

- CC-380 Multi-Angle GlossMeter is Integrated as a Second Instrument - supplemental to Spectrophotometer
- First connect your primary instrument (e.g. i1Pro), next CC-380
- Measure Color
- Measure glossiness - a dedicated tab will appear automatically.
- PDF report can contain Glossiness readings



Which angle should I use?

- **Universal Measurement Angle- 60°**

- All gloss levels can be measured using the standard measurement angle of 60°. This is used as the reference angle with the complimentary angles of 85° and 20° often used for low and high gloss levels respectively.

- **Low Gloss- 85°**

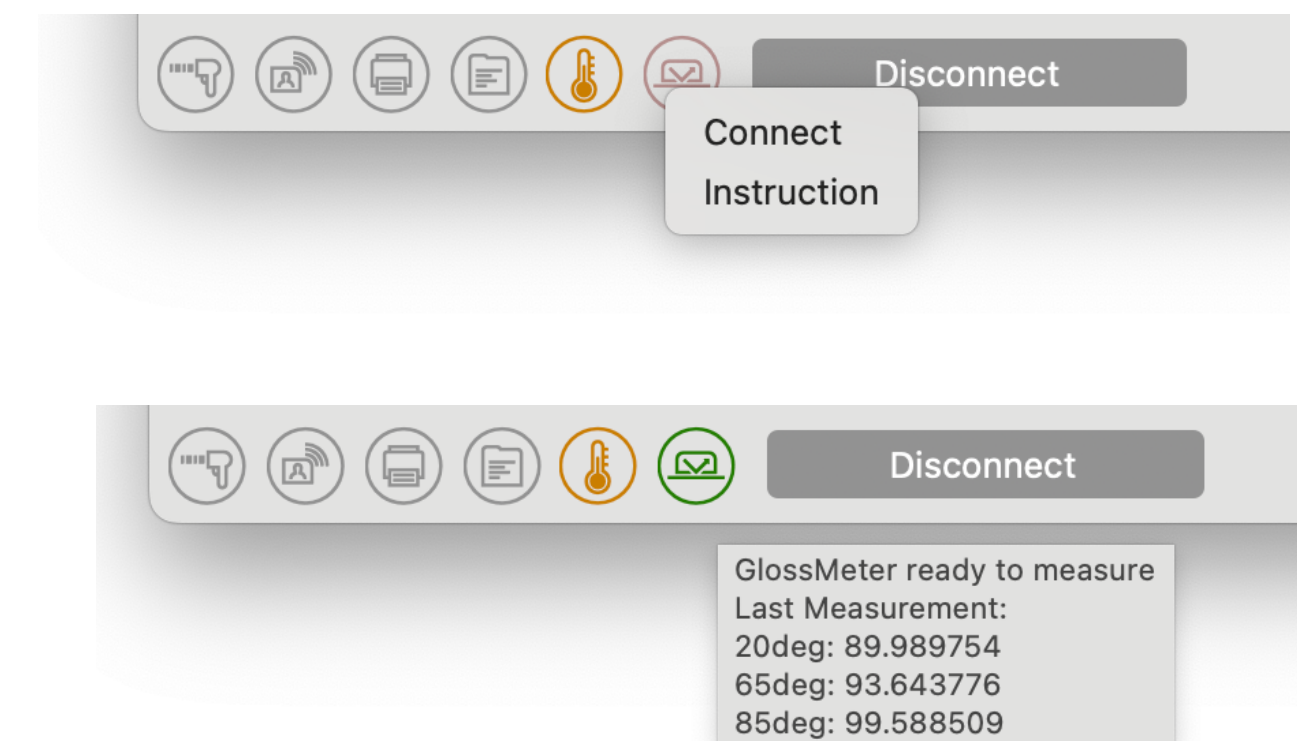
- For improved resolution of low gloss a grazing angle of 85° is used to measure the surface. This angle is recommended for surfaces which measure less than 10 GU when measured at 60°.

- **High Gloss- 20°**

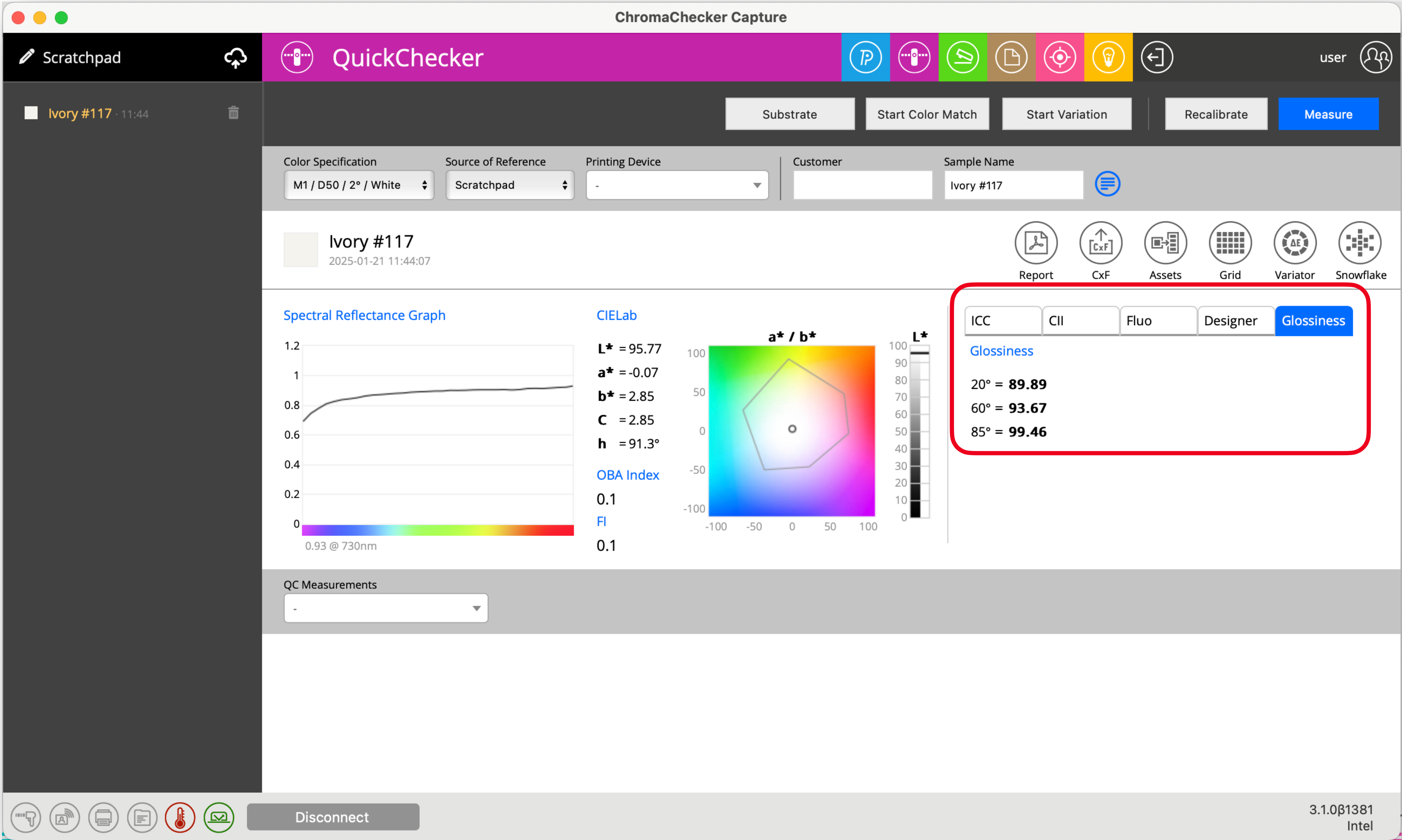
- The acute measurement angle of 20° gives improved resolution for high gloss surfaces. Surfaces that measure 70 GU and above at the standard angle of 60° are often measured with this geometry.
- The 20° angle is more sensitive to haze effects that affect the appearance of a surface

How to?

- Connect CC-380 using USB cable
- Select USB Connection on the unit
- Click Glossmeter icon to connect
- Calibrate Instrument
- Perform test measurement



CC Capture QuickChecker



PDF Report

- Glossiness is and an option - select corresponding checkbox before creating.

PDF Report

Media Size

A4 (210mm x 297mm)

PDF Color Space

L*a*b

☒ Luv + XYZ

☒ Spectral Data

☐ Fluorescent Effect

☐ Color Inconsistency Index

☐ Color Conversion

☒ Glossiness

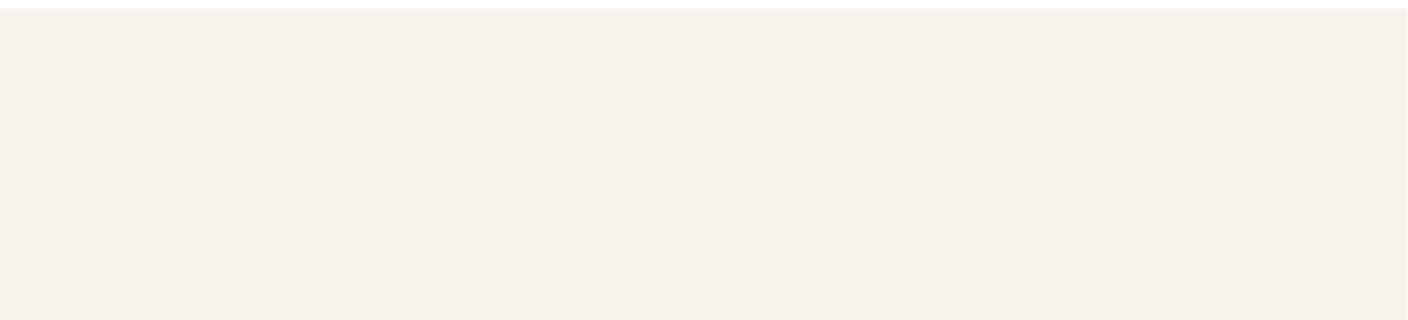
☐ Comparision to Reference

Color Depth

16 bit

Ivory #117

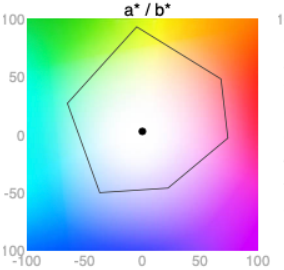
ChromaChecker



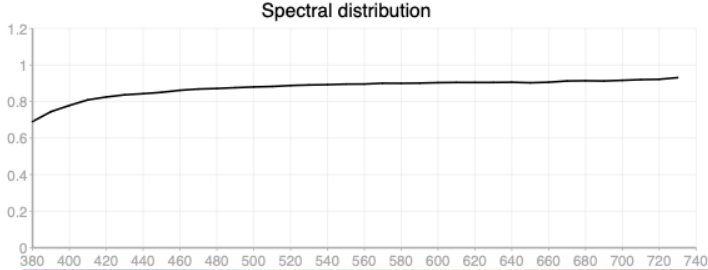
Color Specification: M1 / D50 / 2°
Instrument: X-Rite i1 Pro 2 sn. 1000995

Created: 2025-01-21 11:44:07
Operator: Ed User

L = 95.77
a = -0.07
b = 2.85
C = 2.85
H = 91.3°



Luv
L = 95.77 u = 1.44 v = 3.60
LCH_{uv}
L = 95.77 C = 3.88 H = 68.20
XYZ
X = 86.22 Y = 89.46 Z = 70.59
xyY
x = 0.35 y = 0.36 Y = 89.46



Glossiness

20° = 89.89 60° = 93.67 85° = 99.46

Implementation Roadmap

- Extended definition of sample in Color Library / Assets
- Tracking option in Color Inspector
- Project Inspector
- QuickChecker Comparison feature

Resources – Thank You

Helpful links

- PDF version of this presentation
- https://chromachecker.com/manuals/en/show/_cc-380_triple_angles_gloss_meter
- https://chromachecker.com/manuals/en/show/cc-380_guidelines
- <https://chromachecker.com/manuals/en/show/finishing>
- https://chromachecker.com/manuals/en/show/tappi_t_480
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