

http://farbe.li.tu-berlin.de/AEG9/AEG9L0NA.TXT /.PS; only vector graphic VG; start output
N: no 3D-linearization (OL) in file (F) or PS-startup (S), page 1/1

Output - Input - Output: A loop for relative colour fidelity with the visual rgb^* and LCh^* CIELAB data

For the ISO-test file with 729 colours, see http://standards.iso.org/iso/9241/306/ed-2/AE49/AE49F0PX_CY8_1.PDF
Use the OLM16 method for output linearization, see http://farbe.li.tu-berlin.de/OUTLIN16_01.PDF.
Then there are linear relations between rgb^* and LCh^* . Use reference test chart with 729 CIELAB colours
Colour scanners or cameras produce 729 rgb data.

Ergonomic and colorimetric goals as option

Improved standardization

Interdisciplinary standards shall replace isolated standards to realize the properties of the ISO-colour loop. The output shall be equal for $rgb^*/cmyk^*$ data according to the 1-Minus-Relation (1MR) and continuous.

Display output with $rgb^*/cmyk^*$ data

For different display reflections at work places a relative gamma slider and/or gamma profiles shall produce an ergonomic output for the whole display.

Print output with $rgb^*/cmyk^*$ data

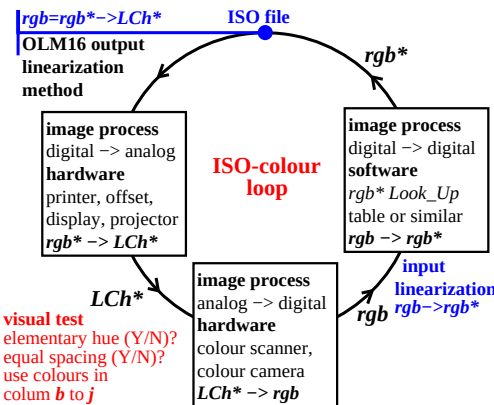
For different paper contrast at work places with the display or printer driver different relative gamma shall produce an ergonomic output. Any printer shall have a $cmyk^*$ -input channel as an option to produce an ergonomic output.

A general ergonomic solution instead of the gamma transfer is the transfer of 16,7 million $rgb^*/cmyk^*$ to $rgb^*/cmyk^*$ data.

or buy one, or use PG4311L of *Colour and Colour Vision*, see <http://standards.iso.org/iso/9241/306/ed-2/ES15.PDF>
Use reference test chart with 729 CIELAB colours
Colour scanners or cameras produce 729 rgb data.

Transfer the 729 rgb data to the 729 rgb^* data.

After the linearized input the 729 colour data rgb^* may be used again for the linearized output.



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Input	Output	Input and output media and applications	Application	Technical Report (TR) or Standard	Method & Test: Linearization
analog ²⁾	analog	ISO/IEC-file series equally spaced in rgb^* ISO/IEC-test chart (hardcopy) series equally spaced in LCh^*	Hardcopy Copier	ISO/IEC TR 24705 ³⁾⁴⁾ former DIS 19839-1 ³⁾ ISO/IEC 15775 ²⁾ under revision (2020)	DIN 33866-1 DIN 33872-1 DIN 33866-2 ²⁾ JIS X 6933 ^{1) 2)}
analog ²⁾	digital	ISO/IEC-test chart (hardcopy) series equally spaced in LCh^*	File Scanner	ISO/IEC TR 24705 ³⁾⁴⁾ former DIS 19839-3 ³⁾	DIN 33866-4
digital ¹⁾	analog	ISO/IEC-test chart (File) series equally spaced in rgb^*	Hardcopy Printer Softcopy Display	ISO/IEC TR 24705 ³⁾⁴⁾ former DIS 19839-2 ³⁾ ISO/IEC TR 24705 ³⁾⁴⁾ former DIS 19839-4 ³⁾ ISO 9241-306:2018 ¹⁾	DIN 33866-3 DIN 33872-2,4 DIN 33866-5 DIN 33872-2,4

- 1) Digital ISO-test files for free download from: <http://standards.iso.org/iso/9241/306/ed-2/index.html>
2) Analog ISO-test charts are available from 3 sources: DIN 33866-2, JIS X 6933, Richter, 2012, offset print (3600dpi), siehe *Colour and Colour Vision*, compare as file <http://standards.iso.org/iso/9241/306/ed-2/ES15.PDF>
3) Free download of content of ISO documents for example for new standard projects, see many URLs in: <http://farbe.li.tu-berlin.de/EE68/EE681-3N.PDF>. 4) Withdrawn in 2019.

ISO/IEC-input linearization method				ISO/IEC-output linearization method, OUTLIN16_01.PDF			
Input	Output	Application	Technical Report (TR) or Standard	Input	Output media	Application	Technical Report (TR) or Standard
Original scene + CIE colours	ISO/IEC Image File	Reference Image File	ISO/IEC 15775 ²⁾ under revision (2020) ISO/IEC TR 24705 ³⁾⁴⁾	ISO/IEC File	Hardcopy	Printer	ISO/IEC TR 19797 ³⁾⁴⁾
				ISO/IEC File	Softcopy	Display	ISO 9241-306:2018 8 viewing conditions
				ISO/IEC File	Softcopy Hardcopy Hardcopy	Display Offset Printer	CIE R8-09:2015 (CIE internal) + http://farbe.li.tu-berlin.de/OUTLIN16_01.PDF

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TUB-test chart AEG9; Affine ergonomic colour-space metric
Standardization with the ISO-colour loop for output and input

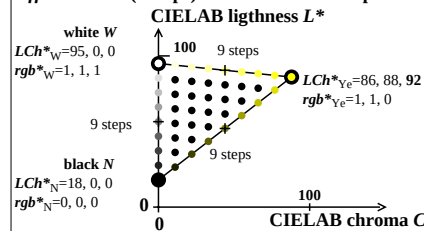
Input	Output	Input and output media and applications	Application	Technical Report (TR) or Standard	Method & Test: Linearization
-	-	-	Basis	ISO/IEC TR 24705 ³⁾⁴⁾ former DIS 19839-1 ³⁾	DIN 33866-1 DIN 33872-1
analog ²⁾	analog	ISO/IEC-file series equally spaced in rgb^* ISO/IEC-test chart (hardcopy) series equally spaced in LCh^*	Hardcopy Copier	ISO/IEC 15775 ²⁾ under revision (2020)	DIN 33866-2 ²⁾ JIS X 6933 ^{1) 2)}
analog ²⁾	digital	ISO/IEC-test chart (hardcopy) series equally spaced in LCh^*	File Scanner	ISO/IEC TR 24705 ³⁾⁴⁾ former DIS 19839-3 ³⁾	DIN 33866-4
digital ¹⁾	analog	ISO/IEC-test chart (File) series equally spaced in rgb^*	Hardcopy Printer Softcopy Display	ISO/IEC TR 24705 ³⁾⁴⁾ former DIS 19839-2 ³⁾ ISO/IEC TR 24705 ³⁾⁴⁾ former DIS 19839-4 ³⁾ ISO 9241-306:2018 ¹⁾	DIN 33866-3 DIN 33872-2,4 DIN 33866-5 DIN 33872-2,4

- 1) Digital ISO-test files for free download from: <http://standards.iso.org/iso/9241/306/ed-2/index.html>
2) Analog ISO-test charts are available from 3 sources: DIN 33866-2, JIS X 6933, Richter, 2012, offset print (3600dpi), siehe *Colour and Colour Vision*, compare as file <http://standards.iso.org/iso/9241/306/ed-2/ES15.PDF>
3) Free download of content of ISO documents for example for new standard projects
ISO/IEC TR 24705:2005 for basis, printer, scanner, display. 4) Withdrawn in 2019.
<http://web.archive.org/web/20060104024850/http://www.jbmia.or.jp/sc28/sc28docs/j28n689.zip>
ISO/IEC 15775:1999/AMD 1:2005 for copier
<http://web.archive.org/web/20060116221659/http://www.jbmia.or.jp/sc28/sc28docs/j28n648.zip>
ISO/IEC TR 19797:2004 for output linearization
<http://web.archive.org/web/20060116212434/http://www.jbmia.or.jp/sc28/sc28docs/j28n687.zip>
ISO/IEC DIS 19839-1 to 4:2004 for basis, printer, scanner, display
<http://web.archive.org/web/20030325005802/http://www.actech.com.br/80/sc28docs/j28n512.pdf>
<http://web.archive.org/web/20030325050829/http://www.actech.com.br/sc28docs/j28n513.pdf>
<http://web.archive.org/web/20030325100829/http://www.actech.com.br/sc28docs/j28n514.pdf>
<http://web.archive.org/web/20030426234527/http://www.actech.com.br/sc28docs/j28n515.pdf>
Definitions for the CIELAB - $cmyk^*$ relationship in 19839-1 to 4
<http://web.archive.org/web/20030325200357/http://www.actech.com.br/sc28docs/j28n516.pdf>

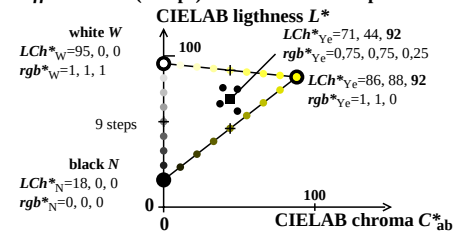
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Equally spaced colour steps in hue planes for offset with rgb^* and CIELAB data LCh^*

Offset colours (9 steps) in CIELAB colour space



Offset colours (9 steps) in CIELAB colour space



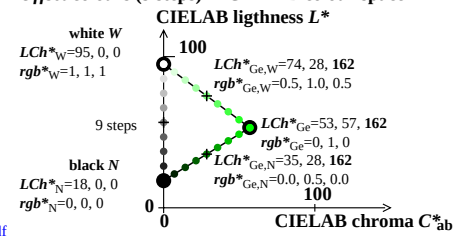
rgb^* input and LCh^* output of Offset colours

Color	rgb^*	LCh^*
R elementary red	1 0 0	47, 74, 26
Y elementary yellow	1 1 0	86, 88, 92
G elementary green	0 1 0	53, 57, 162
B elementary blue	0 0 1	42, 45, 272
N black	0 0 0	18, 0, 0
W white	1 1 1	95, 0, 0

Data according to test chart DIN 33872-2, p.9-12
<http://farbe.li.tu-berlin.de/A/33872E.html>
Elementary-hue angles of CIE R1-47, see
<http://web.archive.org/web/20160304130704/http://files.cie.co.at/526.pdf>

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Offset colours (9 steps) in CIELAB colour space



input: rgb^*
output: transfer to rgb^*_i