

<http://farbe.li.tu-berlin.de/heb3/heb3l0n1.txt/.ps>; only vector graphic VG; start output
see separate images of this page: <http://farbe.li.tu-berlin.de/heb3/heb3.htm>

sensation scaling functions

lightness L^* and tristimulus value Y

adaptation on surround white W

$$L^*_{\text{W}} = 100 \cdot (Y/100)^{1/2,0}$$

adaptation on surround grey U

$$L^*_{\text{IECsRGB}} = 100 \cdot (Y/100)^{1/2,4}$$

description with CIELAB 1976

$$L^*_{\text{CIELAB}} = 116 \cdot (Y/100)^{1/3,0} - 16$$

adaptation on surround black N

$$L^*_{\text{N}} = 100 \cdot (Y/100)^{1/3,0}$$

lightness scaling ($\ln(10)=2,3$, $Y_u=18$)

$$L^*_{\text{CIELAB}}, T^*_{\text{IECsRGB}}, T^*_{\text{TUBJND}}$$

description with CIELAB 1976

$$L^*_{\text{CIELAB}} = 116 \cdot (Y/100)^{1/3,0} - 16$$

Approximation by IECsRGB 1999

$$T^*_{\text{IECsRGB}} = 100 \cdot (Y/100)^{1/2,4}$$

Approximation by TUBJND 2024

$$T^*_{\text{TUBJND}} = 47,49 \cdot (Y/Y_u)^{1/\ln(10)}$$

In $[T^*_{\text{TUBJND,relative}}]$ has the slope 1!

$$\ln [T^*_{\text{TUBJND,r}}] = \log (Y/Y_u)$$

See also: <http://farbe.li.tu-berlin.de/heb3l0n1.txt/.ps>

CIELAB lightness L^* as function of CIE tristimulus value Y

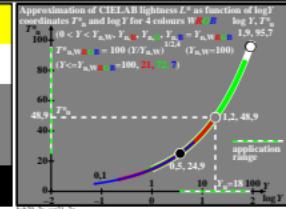
coordinates L^* and Y for achromatic colours

$$L^* = 116 \cdot (Y/Y_u)^{1/3,0} - 16$$

($Y_u=100, Y=1$)

application range

See also: <http://farbe.li.tu-berlin.de/heb3l0n1.txt/.ps>



approximation of CIELAB lightness L^* as function of log Y coordinates T^*_{u} and log Y for 4 colours W, R, G, B: $\log Y, T^*_{\text{u}}$

$100 \cdot (0 < Y < Y_{\text{u}}, Y_u = 100) \cdot (Y_u - Y_u) \cdot (Y_u - Y_u)$

$$T^*_{\text{u}} = 100 \cdot (Y/Y_u)^{1/2,4}$$

($Y_u=100, Y=1$)

application range

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CIELAB lightness L^* as function of log Y coordinates L^* and Y for achromatic colours

$$L^* = 116 \cdot (Y/Y_u)^{1/3,0} - 16$$

($Y_u=100, Y=1$)

application range

See also: <http://farbe.li.tu-berlin.de/heb3l0n1.txt/.ps>

CIELAB lightness L^* as function of log Y coordinates L^* and Y for 4 colours W, R, G, B

$$\log Y, L^*$$

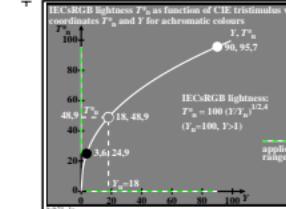
$100 \cdot (0 < Y < Y_{\text{u}}, Y_u = 100) \cdot (Y_u - Y_u) \cdot (Y_u - Y_u)$

$$L^* = 100 \cdot (Y/Y_u)^{1/2,4}$$

($Y_u=100, Y=1$)

application range

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IECsRGB lightness T^* as function of CIE tristimulus value coordinates T^* and Y for achromatic colours

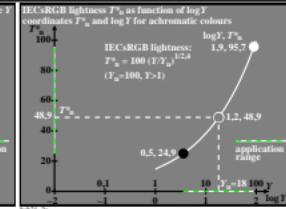
$100 \cdot (0 < Y < Y_{\text{u}}, Y_u = 100) \cdot (Y_u - Y_u) \cdot (Y_u - Y_u)$

$$T^* = 100 \cdot (Y/Y_u)^{1/2,4}$$

($Y_u=100, Y=1$)

application range

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IECsRGB lightness T^* as function of log Y coordinates T^* and Y for achromatic colours

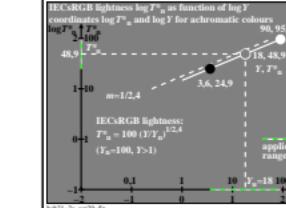
$100 \cdot (0 < Y < Y_{\text{u}}, Y_u = 100) \cdot (Y_u - Y_u) \cdot (Y_u - Y_u)$

$$T^* = 100 \cdot (Y/Y_u)^{1/2,4}$$

($Y_u=100, Y=1$)

application range

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IECsRGB lightness T^* as function of log Y coordinates T^* and log Y for 4 colours W, R, G, B

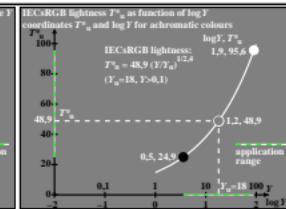
$100 \cdot (0 < Y < Y_{\text{u}}, Y_u = 100) \cdot (Y_u - Y_u) \cdot (Y_u - Y_u)$

$$T^* = 100 \cdot (Y/Y_u)^{1/2,4}$$

($Y_u=100, Y=1$)

application range

See also: <http://farbe.li.tu-berlin.de/heb3l0n1.txt/.ps>



IECsRGB lightness T^* as function of CIE tristimulus value coordinates T^* and Y for achromatic colours

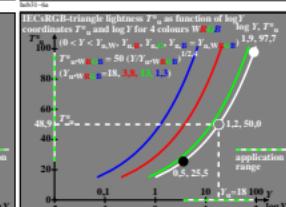
$100 \cdot (0 < Y < Y_{\text{u}}, Y_u = 100) \cdot (Y_u - Y_u) \cdot (Y_u - Y_u)$

$$T^* = 100 \cdot (Y/Y_u)^{1/2,4}$$

($Y_u=100, Y=1$)

application range

See also: <http://farbe.li.tu-berlin.de/heb3l0n1.txt/.ps>



IECsRGB lightness T^* as function of log Y coordinates T^* and log Y for 4 colours W, R, G, B

$100 \cdot (0 < Y < Y_{\text{u}}, Y_u = 100) \cdot (Y_u - Y_u) \cdot (Y_u - Y_u)$

$$T^* = 100 \cdot (Y/Y_u)^{1/2,4}$$

($Y_u=100, Y=1$)

application range

See also: <http://farbe.li.tu-berlin.de/heb3l0n1.txt/.ps>

see similar files of the whole serie: <http://farbe.li.tu-berlin.de/heb3l0n1.txt/.ps> or <http://color.li.tu-berlin.de>