log (*L**) CIELAB lightness

log(*L**) *L**

with Y_u=18

3 1000

CIELAB lightness for all colours with L^*_u=50:

$L^*_{CIELAB} = s(Y/Y_u)^{1/3}-16$ (s=66, Y_u=18, 1<*Y*<=100)

(s=100 $(Y_u/100)^{1/3}$)

2 100

L^*_u=50, Y_u=18

log(L^*_u)=1,69, m_u=0,43

1 10

application range

0 1

0,1 1 Y_N=4 10 Y_u=18 100 *Y*

−2 −1 0 1 2 log(*Y*)

BEU80−1A

log (*L**/*L**$_u$) relative CIELAB lightness

*L**/*L**$_u$

with Y_u=18

2 100

relative normalized CIELAB data

CIELAB lightness for all colours with L^*_u=50:

$L^*_{CIELAB} = s(Y/Y_u)^{1/3}-16$ (s=66, Y_u=18, 1<*Y*<=100)

1 10

L^*_u=50, Y_u=18

log[(*L**)/(*L**$_u$)]=0, m_u=0,43

0 1

application range

−1 0,1

0,1 1 Y_N=4 10 Y_u=18 100 *Y*

−2 −1 0 1 2 log(*Y*)

BEU80−2A

log Δ*Y* CIELAB-tristimulus value difference

log(Δ*Y*) Δ*Y*

2 100

$L^*_{CIELAB} = s(Y/Y_u)^{1/3}-16$ (s=66, Y_u=18, 1<*Y*<=100)

CIELAB-tristimulus value difference

log(*dY*) = log(3 (Y_u/116)) + (2/3) log(Y/Y_n)

= log(3($Y_u^{1/3}$)/116) + (2/3) log(*Y*)

1 10

Y_u=18, dY_u=0,83, dY_u/Y_u=0,0454

0 1

log(*dY*)=0,82, m_u=0,66

application range

−1 0,1

0,1 1 Y_N=4 10 Y_u=18 100 *Y*

−2 −1 0 1 2 log(*Y*)

BEU80−3A

log(Δ*Y*/Δ*Y*$_u$) relative CIELAB-tristimulus value difference

Δ*Y*/Δ*Y*$_u$

2 100

$L^*_{CIELAB} = s(Y/Y_u)^{1/3}-16$ (s=66, Y_u=18, 1<*Y*<=100)

relative CIELAB-tristimulus value difference

log(*dY*) = log(3 (Y_u/116)) + (2/3) log(Y/Y_n)

= log(3($Y_u^{1/3}$)/116) + (2/3) log(*Y*)

1 10

Y_u=18, dY_u=0,83, dY_u/Y_u=0,0454

0 1

log[(*dY*)/(*dY*$_u$)]=0, m_u=0,66

application range

−1 0,1

0,1 1 Y_N=4 10 Y_u=18 100 *Y*

−2 −1 0 1 2 log(*Y*)

BEU80−4A

log (Δ*Y*/*Y*) CIELAB-tristimulus value sensitivity

log(C_r) C_r=(Δ*Y*/*Y*)

1 10

$L^*_{CIELAB} = s(Y/Y_u)^{1/3}-16$ (s=66, Y_u=18, 1<*Y*<=100)

CIELAB-tristimulus value sensitivity

log[(*dY*/*Y*) = log(3 ($Y_u^{1/3}$)/116) − (1/3) log*Y*

0 1

application range

−1 0,1

log(*dY*/*Y*)=−1,33, m_u=−0,33

Y_u=18, dY_u=0,83, dY_u/Y_u=0,0454

−2 0,1

0,1 1 Y_N=4 10 Y_u=18 100 *Y*

−2 −1 0 1 2 log(*Y*)

BEU80−5A

log [(Δ*Y*/*Y*) / (ΔY_u/Y_u)] relative CIELAB-tristimulus value sensitivity

C_r/C_{ru}=(Δ*Y*/*Y*)/(ΔY_u/Y_u)

2 100

$L^*_{CIELAB} = s(Y/Y_u)^{1/3}-16$ (s=66, Y_u=18, 1<*Y*<=100)

relative CIELAB-tristimulus value sensitivity

log(*dY*/*Y*)/(*dY*$_u$/Y_u)] = log(*Y*/Y_u)$^{-1/3}$

1 10

application range

0 1

log[(*dY*/*Y*)/(*dY*$_u$/Y_u)]=0, m_u=−0,33

Y_u=18, dY_u=0,83, dY_u/Y_u=0,0454

−1 0,1

0,1 1 Y_N=4 10 Y_u=18 100 *Y*

−2 −1 0 1 2 log(*Y*)

BEU80−6A

log (*Y*/Δ*Y*) CIELAB-tristimulus value contrast

log(S_r) S_r=(*Y*/Δ*Y*)

2 100

$L^*_{CIELAB} = s(Y/Y_u)^{1/3}-16$ (s=66, Y_u=18, 1<*Y*<=100)

CIELAB-tristimulus value contrast

log(*Y*/*dY*)= log[(1/3) (116/Y_u)] + (1/3) log(Y/Y_n)

= log[(1/3) 116/($Y_u^{1/3}$)] + (1/3) log(*Y*)

1 10

L^*_u=50, Y_u=18, dY_u=0,83, Y_u/dY_u=21

0 1

log(*Y*/*dY*)=1,33, m_u=0,33

application range

−1 0,1

0,1 1 Y_N=4 10 Y_u=18 100 *Y*

−2 −1 0 1 2 log(*Y*)

BEU80−7A

log [(*Y*/Δ*Y*) / (*Y*$_u$/ΔY_u)] relative CIELAB-tistimulus value contrast

log(S_r) S_r/S_{ru}=(*Y*/Δ*Y*)/(*Y*$_u$/ΔY_u)

3 1000

$L^*_{CIELAB} = s(Y/Y_u)^{1/3}-16$ (s=66, Y_u=18, 1<*Y*<=100)

relative CIELAB-tristimulus value contrast

log[(*Y*/Δ*Y*)/(*Y*$_u$/ΔY_u)] = log(*Y*/Y_u)$^{1/3}$

2 100

L^*_u=50, Y_u=18, dY_u=0,83

L^*_u=50, Y_u=18, dY_u=0,83, Y_u/dY_u=21

log[(*Y*/*dY*)/(*Y*$_u$/*dY*$_u$)]=0, m_u=0,33

1 10

application range

0 1

0,1 1 Y_N=4 10 Y_u=18 100 *Y*

−2 −1 0 1 2 log(*Y*)

BEU80−8A

BEU80−7N