

$\log(L^*/L^*_{u})$

$$L^*/L^*_{u}$$

2
100

$L^* = 116(Y/Y_n)^{1/3} - 16 \quad (Y_n=100, 1 \leq Y \leq 100)$ [1b]

1
10

0
1

-1
-2

0
-1

0,1
-1

0
0

10
1

Y_u=18 100 Y
2
log Y

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CIELAB lightness

L^* normalized to the background lightness L^*_{u}

$L^* = 116(Y/Y_n)^{1/3} - 16 \quad (Y_n=100, 1 \leq Y \leq 100)$ [1b]

$$\log[(L^*_{u}/L^*)]=0, m_u=0,43$$

$L^*_{u}=50, Y_u=18$

0,179

10

Y_u=18 100 Y

2,000

application range

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$\log(L^*_{85,2}/L^*_{85,2,u})$ LABJND lightness

$$L^*/L^*_{85,2,u}$$

2
100

$L^*_{85,2}$ normalized to the background lightness $L^*_{85,2,u}$

$L^*/L^*_{u}=(t/a) \{ \ln(1+a \cdot Y) - \ln(1+a \cdot Y_u) \}$ [1b]

$L^*/L^*_{u}=(t/a) \{ \ln[1+b \cdot (Y/Y_u)] - \ln(1+b) \}$ [2b]

a=0,3411

t=88,23

t/a=258,6

b=6,141

$$[3b]$$

1
10

0
1

-1
-2

0
0

10
1

Y_u=18 100 Y
2
log Y

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fem60-3n

$\log[(Y/\Delta Y) / (Y_u/\Delta Y_u)]$ CIELAB-based contrast normalized to $Y_u/\Delta Y_u$

$$C_r/C_{ru}=(Y/\Delta Y)/(Y_u/\Delta Y_u)$$

$$100L^*=116(Y/Y_n)^{1/3} - 16 \quad (Y_n=100, 1 \leq Y \leq 100) \quad [1h]$$

$$Y/dY = (3/116) \cdot Y^{1/3} Y^{2/3} \quad [2h]$$

$$Y/dY = e \cdot (Y/Y_u)^{2/3} \quad [3h]$$

$$Y/dY = f \cdot (Y/Y_u)^{2/3} \quad [4h]$$

$$e = 833,048 \quad f = 5721,613 \quad [5h]$$

$$Y_u=18, dY_u=0,83, (Y/dY_u)=22$$

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

$$0,378 \quad 1,757$$

$$10$$

$$Y_u=18 100 Y$$

$$-1 \quad -1 \quad 0,1 \quad 1 \quad 10 \quad 1 \quad 10 \quad 2 \quad log Y$$

$\log[(Y/\Delta Y) / (Y_u/\Delta Y_u)]$ LABJND-based contrast normalized to $Y_u/\Delta Y_u$

$$C_r/C_{ru}=(Y/\Delta Y)/(Y_u/\Delta Y_u)$$

$$100L^*_{85,2}=(t/a) \ln(1+a \cdot Y) \quad [1h]$$

$$a=0,3411 \quad t=88,23 \quad t/a=258,6 \quad [2h]$$

tristimulus value Y contrast

$$(Y/dY) / (Y_u dY_u) \quad [3h]$$

$$= [Y / (1 + a \cdot Y)] / [Y_u / (1 + a \cdot Y_u)] \quad [4h]$$

$$Y_u=18, dY_u=0,08, (Y/dY_u)=222$$

$$\log[(Y/dY)_u/(Y/dY_u)]=0, m_u=0,13$$

$$0,295 \quad 1,129$$

$$10$$

$$Y_u=18 100 Y$$

$$-1 \quad -1 \quad 0,1 \quad 1 \quad 10 \quad 1 \quad 10 \quad 2 \quad log Y$$

fem60-8A