

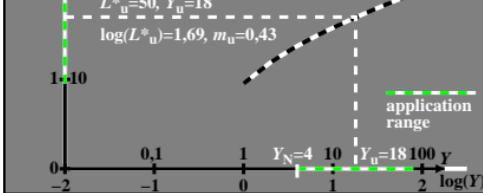
$\log(L^*)$  CIELAB lightness

with  $Y_n=100$

$$\log(L^*) \propto L^*$$

CIELAB lightness for all colours with  $L^*_{u}=50$ :  
 $L^*_{CIELAB} = s(Y/Y_n)^{1/3} - 16$  ( $s=100, Y_n=100, 1 < Y \leq 100$ )

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



BEU70-1A

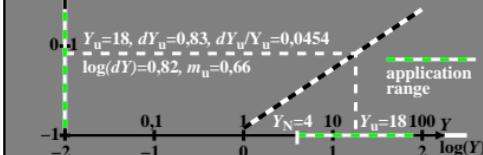
$$\log(\Delta Y)$$

CIELAB-tristimulus value difference

$$\log(\Delta Y) \propto \Delta Y$$

$L^*_{CIELAB} = s(Y/Y_n)^{1/3} - 16$  ( $s=100, Y_n=100, 1 < Y \leq 100$ )  
 CIELAB-tristimulus value difference

$$\log(dY) = \log(3(Y_n/116)) + (2/3)\log(Y/Y_n) = \log(3(Y_n^{1/3}/116)) + (2/3)\log(Y)$$



BEU70-3A

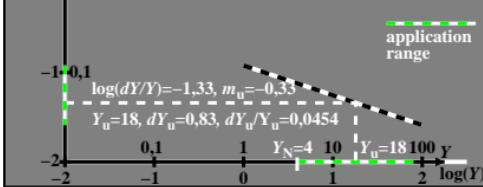
$$\log(\Delta Y/Y)$$

CIELAB-tristimulus value sensitivity

$$\log(C_r) \propto (\Delta Y/Y)$$

$L^*_{CIELAB} = s(Y/Y_n)^{1/3} - 16$  ( $s=100, Y_n=100, 1 < Y \leq 100$ )  
 CIELAB-tristimulus value sensitivity

$$\log[(dY/Y) / \log(3(Y_n^{1/3}/116)) - (1/3)\log Y]$$



BEU70-5A

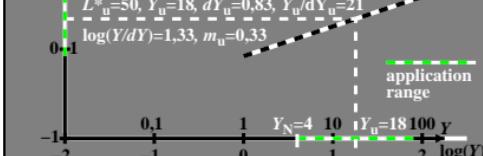
$$\log(Y/\Delta Y)$$

CIELAB-tristimulus value contrast

$$\log(S_r) \propto Y/\Delta Y$$

$L^*_{CIELAB} = s(Y/Y_n)^{1/3} - 16$  ( $s=100, Y_n=100, 1 < Y \leq 100$ )  
 CIELAB-tristimulus value contrast

$$\log(Y/dY) = \log[(1/3)(116/Y_n)] + (1/3)\log(Y/Y_n) = \log[(1/3)116(Y_n^{1/3})] + (1/3)\log(Y)$$



BEU70-7A

$\log(L^*/L^*_{u_0})$  relative CIELAB lightness

with  $Y_n=100$

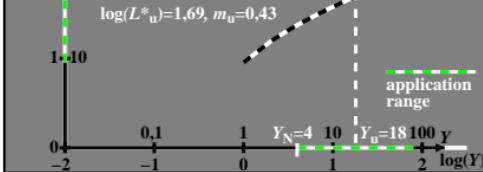
$$L^*/L^*_{u_0}$$

relative normalized CIELAB data

CIELAB lightness for all colours with  $L^*_{u_0}=18$ :

$$L^*_{CIELAB} = s(Y/Y_n)^{1/3} - 16 \quad (s=100, Y_n=100, 1 < Y \leq 100)$$

$$L^*_{u_0}=50, Y_u=18$$



BEU70-2A

$$\log(\Delta Y/\Delta Y_u)$$

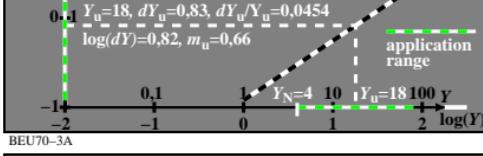
relative CIELAB-tristimulus value difference

$$\Delta Y/\Delta Y_u$$

$L^*_{CIELAB} = s(Y/Y_n)^{1/3} - 16$  ( $s=100, Y_n=100, 1 < Y \leq 100$ )  
 relative CIELAB-tristimulus value difference

$$\log(dY) = \log(3(Y_n/116)) + (2/3)\log(Y/Y_n) = \log(3(Y_n^{1/3}/116)) + (2/3)\log(Y)$$

$$Y_u=18, dY_u=0.83, dY_u/Y_u=0.0454$$



BEU70-4A

$$\log[(\Delta Y/Y) / (\Delta Y_u/Y_u)]$$

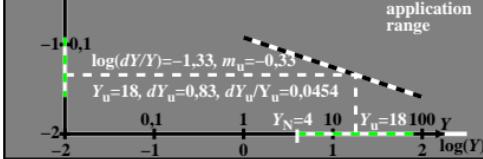
relative CIELAB-tristimulus value sensitivity

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

$L^*_{CIELAB} = s(Y/Y_n)^{1/3} - 16$  ( $s=100, Y_n=100, 1 < Y \leq 100$ )  
 relative CIELAB-tristimulus value sensitivity

$$\log[(dY/Y) / (\Delta Y_u/Y_u)] = \log(Y/Y_u)^{-1/3}$$

$$Y_u=18, dY_u=0.83, dY_u/Y_u=0.0454$$



BEU70-6A

$$\log[(Y/\Delta Y) / (Y_u/\Delta Y_u)]$$

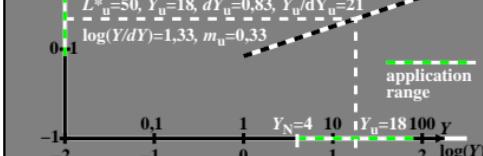
relative CIELAB-tristimulus value contrast

$$S_r/S_{ru} = (Y/\Delta Y) / (Y_u/\Delta Y_u)$$

$L^*_{CIELAB} = s(Y/Y_n)^{1/3} - 16$  ( $s=100, Y_n=100, 1 < Y \leq 100$ )  
 relative CIELAB-tristimulus value contrast

$$\log[(Y/\Delta Y) / (Y_u/\Delta Y_u)] = \log(Y/Y_u)^{1/3}$$

$$L^*_{u_0}=50, Y_u=18, dY_u=0.83, dY_u/Y_u=0.0454$$



BEU70-7A