TUB-Registrierung: 20241001-hgp0/hgp0l0na.txt /.ps
Anwendung für Beurteilung und Messung von Display- oder Druck-Ausgabe
TUB-Material: Code=rha4ta

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

**LABJND-Helligkeit $L^*_{85,2}$ normiert für die UmgebungsHelligkeit $L^*_{85,2,u}$**

$L^*/L^*_u$= (t/a) { ln ( 1 + a·$Y$) − ln ( 1 + a·$Y_u$ ) } [1a]
$L^*/L^*_u$= (t/a) { ln [ 1 + b·($Y/Y_u$)] − ln ( 1 + b ) } [1b]
a=0,3411    t=88,23    t/a=258,6    b=6,141 [1c]

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

**CIELAB-Helligkeit $L^*$ normiert für die UmgebungsHelligkeit $L^*_u$**

$L^*$=s $(Y/Y_n)^n$−d   ($Y_n$=100, $Y_u$=18, s=116, n=1/3, d=16) [1a]
$L^*$=r $(Y/Y_u)^n$−d   (r = s $(Y_u/Y_n)^n$=65,49, $L^*_u$= r − d) [1b]
$L^*/L^*_u$=g$(Y/Y_u)^n$−h   (g=r/(r−d)=1,32, h=d/(r−d)=0,32) [1c]
log [($L^*/L^*_u$+h) / g ] = n log ($Y/Y_u$) [1d]
ln [($L^*/L^*_u$ + h) / g ] = ln(10) n log ($Y/Y_u$) [1e]
($L^*/L^*_u$ + h) / g ] = e^{ln(10) n log ($Y/Y_u$)} [1f]

**$(\Delta Y/Y) / (\Delta Y/Y)_u$**

**LABJND-$Y$-Empfindlichkeit normiert für $(\Delta Y/Y)_u$**

$L^*/L^*_u$= (t/a) { ln ( 1 + a·$Y$) − ln ( 1 + a·$Y_u$ ) } [1a]
$L^*/L^*_u$= (t/a) { ln [ 1 + b·($Y/Y_u$)] − ln ( 1 + b ) } [1b]
**Hellbezugswert-$Y$-Empfindlichkeit**
$(dY/Y) / (dY_u/Y_u)$
   = [( 1 + a·$Y$) / $Y$ ] / [ ( 1 + a·$Y_u$) / $Y_u$ ] [3f]

**$(\Delta Y/Y) / (\Delta Y/Y)_u$**

**CIELAB-$Y$-Empfindlichkeit normiert für $(\Delta Y/Y)_u$**

$L^*$=s $(Y/Y_n)^n$−d   ($Y_n$=100, $Y_u$=18, s=116, n=1/3, d=16) [1a]
$L^*$=r $(Y/Y_u)^n$−d   (r = s $(Y_u/Y_n)^n$=65,49, $L^*_u$= r − d) [1b]
$dY / Y$ = [ ($Y_n$/ ( n s ) ] $(Y / Y_n)^{1−n}$ / $Y$ [3c]
$(dY / Y)_u$ = [ ($Y_n$/ ( n s ) ] $(Y_u / Y_n)^{1−n}$ / $Y_u$ [3d]
$(dY / Y) / (dY / Y)_u$ = $(Y/Y_u)^{−n}$ [3e]
log [$(dY / Y) / (dY / Y)_u$] = (−n) log($Y / Y_u$) [3f]

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

**IECsRGB-Helligkeit $L^*$ normiert für die UmgebungsHelligkeit $L^*_u$**

$L^*$=s $(Y/Y_n)^n$−d   ($Y_n$=100, $Y_u$=18, s=100, n=1/2,4, d=0) [1a]
$L^*$=r $(Y/Y_u)^n$−d   (r = s $(Y_u/Y_n)^n$=48,94, $L^*_u$= r − d) [1b]
$L^*/L^*_u$=$(Y/Y_u)^n$ [1c]
log ($L^*/L^*_u$) = n log ($Y/Y_u$) [1d]
ln ($L^*/L^*_u$) = ln(10) n log ($Y/Y_u$) [1e]
$L^*/L^*_u$= e^{ln(10) n log ($Y/Y_u$)} [1f]

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

**TUBsRGB-Helligkeit $L^*$ normiert für die UmgebungsHelligkeit $L^*_u$**

$L^*$=s $(Y/Y_n)^n$−d   ($Y_n$=100, $Y_u$=18, s=100, n=1/ln(10), d=0[1a]
$L^*$=r $(Y/Y_u)^n$−d   (r = s $(Y_u/Y_n)^n$=47,48, $L^*_u$= r − d) [1b]
$L^*/L^*_u$=$(Y/Y_u)^{1/ln(10)}$ (ln(x)=ln(10) log(x)) [1c]
log$(L^*/L^*_u)$=(1/ln(10)) log($Y/Y_u$) [1d]
ln$(L^*/L^*_u)$=log($Y/Y_u$) [1e]
$L^*/L^*_u$= e^{log($Y/Y_u$)} [1f]

**$(\Delta Y/Y) / (\Delta Y/Y)_u$**

**IECsRGB-$Y$-Empfindlichkeit normiert für $(\Delta Y/Y)_u$**

$L^*$=s $(Y/Y_n)^n$−d   ($Y_n$=100, $Y_u$=18, s=100, n=1/2,4, d=0) [1a]
$L^*$=r $(Y/Y_u)^n$−d   (r = s $(Y_u/Y_n)^n$=48,94, $L^*_u$= r − d) [1b]
$dY / Y$ = [ ($Y_n$/ ( n s ) ] $(Y / Y_n)^{1−n}$ / $Y$ [3c]
$(dY / Y)_u$ = [ ($Y_n$/ ( n s ) ] $(Y_u / Y_n)^{1−n}$ / $Y_u$ [3d]
$(dY / Y) / (dY / Y)_u$ = $(Y/Y_u)^{−n}$ [3e]
log [$(dY / Y) / (dY / Y)_u$] = (−n) log($Y / Y_u$) [3f]

**$(\Delta Y/Y) / (\Delta Y/Y)_u$**

**TUBsRGB-$Y$-Empfindlichkeit normiert für $(\Delta Y/Y)_u$**

$L^*$=s $(Y/Y_n)^n$−d   ($Y_n$=100, $Y_u$=18, s=100, n=1/ln(10), d=0[1a]
$L^*$=r $(Y/Y_u)^n$−d   (r = s $(Y_u/Y_n)^n$=47,48, $L^*_u$= r − d) [1b]
$dY / Y$ = [ ($Y_n$/ ( n s ) ] $(Y / Y_n)^{1−n}$ / $Y$ [3c]
$(dY / Y)_u$ = [ ($Y_n$/ ( n s ) ] $(Y_u / Y_n)^{1−n}$ / $Y_u$ [3d]
$(dY / Y) / (dY / Y)_u$ = $(Y/Y_u)^{−n}$ [3e]
log [$(dY / Y) / (dY / Y)_u$] = (−n) log($Y / Y_u$) [3f]

**$\Delta Y/\Delta Y_u$**

**LABJND-Normfarbwertdifferenz $\Delta Y$ normiert für $\Delta Y_u$**

$L^*/L^*_u$= (t/a) { ln ( 1 + a·$Y$) − ln ( 1 + a·$Y_u$ ) } [1a]
$L^*/L^*_u$= (t/a) { ln [ 1 + b·($Y/Y_u$)] − ln ( 1 + b ) } [1b]
**normierte Normfarbwert-$Y$-Differenz**
$dY/dY_u$ = (1 + a·$Y$) / ( 1 + a·$Y_u$) [3d]

**$\Delta Y/\Delta Y_u$**

**CIELAB-Normfarbwertdifferenz $\Delta Y$ normiert für $\Delta Y_u$**

$L^*$=s $(Y/Y_n)^n$−d   ($Y_n$=100, $Y_u$=18, s=116, n=1/3, d=16) [1a]
$L^*$=r $(Y/Y_u)^n$−d   (r = s $(Y_u/Y_n)^n$=65,49, $L^*_u$= r − d) [1b]
$dY$ = [$Y_n$/ ( n s )] $(Y / Y_n)^{1−n}$ [2c]
$dY_u$ = [$Y_n$/ ( n s )] $(Y_u / Y_n)^{1−n}$ = 1,4602 [2d]
$dY / dY_u$ = $(Y/Y_u)^{1−n}$ [2e]
log$(dY / dY_u)$ = (1−n) log($Y / Y_u$) [2f]

**$(Y/\Delta Y) / (Y/\Delta Y)_u$**

**LABJND-$Y$-Kontrast normiert für $(Y/\Delta Y)_u$**

$L^*/L^*_u$= (t/a) { ln ( 1 + a·$Y$) − ln ( 1 + a·$Y_u$ ) } [1a]
$L^*/L^*_u$= (t/a) { ln [ 1 + b·($Y/Y_u$)] − ln ( 1 + b ) } [1b]
**Hellbezugswert-$Y$ Kontrast**
$(Y/dY) / (Y_u dY_u)$
   = [ $Y$ / ( 1 + a·$Y$) ] / [ $Y_u$ / ( 1 + a·$Y_u$) ] [4h]

**$(Y/\Delta Y) / (Y/\Delta Y)_u$**

**CIELAB-$Y$-Kontrast normiert für $(Y/\Delta Y)_u$**

$L^*$=s $(Y/Y_n)^n$−d   ($Y_n$=100, $Y_u$=18, s=116, n=1/3, d=16) [1a]
$L^*$=r $(Y/Y_u)^n$−d   (r = s $(Y_u/Y_n)^n$=65,49, $L^*_u$= r − d) [1b]
$Y / dY$ = $Y$ / [ [ ($Y_n$/ ( n s ) ] $(Y / Y_n)^{1−n}$ ] [4c]
$(Y / Y)_u$ = $Y_u$ / { [ ($Y_n$/ ( n s ) ] $(Y_u / Y_n)^{1−n}$ } [4d]
$(Y / dY) / (Y / dY)_u$ = $(Y/Y_u)^n$ [4e]
log [$(Y / dY) / (Y / dY)_u$] = (n) log($Y / Y_u$) [4f]

**$\Delta Y/\Delta Y_u$**

**IECsRGB-Normfarbwertdifferenz $\Delta Y$ normiert für $\Delta Y_u$**

$L^*$=s $(Y/Y_n)^n$−d   ($Y_n$=100, $Y_u$=18, s=100, n=1/2,4, d=0) [1a]
$L^*$=r $(Y/Y_u)^n$−d   (r = s $(Y_u/Y_n)^n$=48,94, $L^*_u$= r − d) [1b]
$dY$ = [$Y_n$/ ( n s )] $(Y / Y_n)^{1−n}$ [2c]
$dY_u$ = [$Y_n$/ ( n s )] $(Y_u / Y_n)^{1−n}$ = 1,1746 [2d]
$dY / dY_u$ = $(Y/Y_u)^{1−n}$ [2e]
log$(dY / dY_u)$ = (1−n) log($Y / Y_u$) [2f]

**$\Delta Y/\Delta Y_u$**

**TUBsRGB-Normfarbwertdifferenz $\Delta Y$ normiert für $\Delta Y_u$**

$L^*$=s $(Y/Y_n)^n$−d   ($Y_n$=100, $Y_u$=18, s=100, n=1/ln(10), d=0[1a]
$L^*$=r $(Y/Y_u)^n$−d   (r = s $(Y_u/Y_n)^n$=47,48, $L^*_u$= r − d) [1b]
$dY$ = [$Y_n$/ ( n s )] $(Y / Y_n)^{1−n}$ [2c]
$dY_u$ = [$Y_n$/ ( n s )] $(Y_u / Y_n)^{1−n}$ = 1,0934 [2d]
$dY / dY_u$ = $(Y/Y_u)^{1−n}$ [2e]
log$(dY / dY_u)$ = (1−n) log($Y / Y_u$) [2f]

**$(Y/\Delta Y) / (Y/\Delta Y)_u$**

**IECsRGB-$Y$-Kontrast normiert für $(Y/\Delta Y)_u$**

$L^*$=s $(Y/Y_n)^n$−d   ($Y_n$=100, $Y_u$=18, s=100, n=1/2,4, d=0) [1a]
$L^*$=r $(Y/Y_u)^n$−d   (r = s $(Y_u/Y_n)^n$=48,94, $L^*_u$= r − d) [1b]
$Y / dY$ = $Y$ / { [ ($Y_n$/ ( n s ) ] $(Y / Y_n)^{1−n}$ } [4c]
$(Y / Y)_u$ = $Y_u$ / { [ ($Y_n$/ ( n s ) ] $(Y_u / Y_n)^{1−n}$ } [4d]
$(Y / dY) / (Y / dY)_u$ = $(Y/Y_u)^n$ [4e]
log [$(Y / dY) / (Y / dY)_u$] = (n) log($Y / Y_u$) [4f]

**$(Y/\Delta Y) / (Y/\Delta Y)_u$**

**TUBsRGB-$Y$-Kontrast normiert für $(Y/\Delta Y)_u$**

$L^*$=s $(Y/Y_n)^n$−d   ($Y_n$=100, $Y_u$=18, s=100, n=1/ln(10), d=0[1a]
$L^*$=r $(Y/Y_u)^n$−d   (r = s $(Y_u/Y_n)^n$=47,48, $L^*_u$= r − d) [1b]
$Y / dY$ = $Y$ / { [ ($Y_n$/ ( n s ) ] $(Y / Y_n)^{1−n}$ } [4c]
$(Y / Y)_u$ = $Y_u$ / { [ ($Y_n$/ ( n s ) ] $(Y_u / Y_n)^{1−n}$ } [4d]
$(Y / dY) / (Y / dY)_u$ = $(Y/Y_u)^n$ [4e]
log [$(Y / dY) / (Y / dY)_u$] = (n) log($Y / Y_u$) [4f]