

Data of Maximum color M in colorimetric system laser printer HRS27\_96; separation  $cm\dot{y}0^*$  for input or output; Six hue angles of the 60 degree standard colours  $z$ :  $h_{ab,z} = 30.0, 90.0, 150.0, 210.0, 270.0, 330.0$ ;  
Six hue angles of the device colours  $d$ :  $h_{ab,d} = 33.7, 99.3, 150.0, 227.4, 300.0, 351.0$ ; Six hue angles of the elementary colours  $e$ :  $h_{ab,e} = 25.5, 92.3, 162.2, 217.0, 271.7, 328.6$

**Y=J<sub>d</sub> Yellow**

$LCH^*_{Jd} = 91.5 \ 86.2 \ 99.2$   
 $LAB^*_{Jd} = 91.5 \ -13.9 \ 85.0$   
 $rgb^*_{Jd} = 1.0 \ 1.0 \ 0.0$

**L=G<sub>d</sub> Leaf green**

$LCH^*_{Ld} = 56.9 \ 73.9 \ 149.9$   
 $LAB^*_{Ld} = 56.9 \ -63.9 \ 36.9$   
 $rgb^*_{Ld} = 0.0 \ 1.0 \ 0.0$

**C=C<sub>d</sub> Cyan blue**

$LCH^*_{Cd} = 52.2 \ 50.2 \ 227.4$   
 $LAB^*_{Cd} = 52.2 \ -34.0 \ -37.0$   
 $rgb^*_{Cd} = 0.0 \ 1.0 \ 1.0$

**O=R<sub>d</sub> Orange red**

$LCH^*_{Od} = 46.2 \ 73.4 \ 33.7$   
 $LAB^*_{Od} = 46.2 \ 61.1 \ 40.7$   
 $rgb^*_{Od} = 1.0 \ 0.0 \ 0.0$

**M=M<sub>d</sub> Magenta red**

$LCH^*_{Md} = 45.3 \ 71.4 \ 350.9$   
 $LAB^*_{Md} = 45.3 \ 70.5 \ -11.2$   
 $rgb^*_{Md} = 1.0 \ 0.0 \ 1.0$

**V=B<sub>d</sub> Violet blue (very similar to elementary Blue)**

$LCH^*_{Vd} = 31.6 \ 47.2 \ 300.0$   
 $LAB^*_{Vd} = 31.6 \ 23.6 \ -40.8$   
 $rgb^*_{Vd} = 0.0 \ 0.0 \ 1.0$

**J<sub>e</sub> Yellow**

$LCH^*_{Je} = 84.5 \ 76.2 \ 92.0$   
 $LAB^*_{Je} = 84.5 \ -2.6 \ 76.2$   
 $rgb^*_{Je} = 1.0 \ 0.806 \ 0.0$

**G<sub>e</sub> Green**

$LCH^*_{Ge} = 57.1 \ 62.3 \ 162.0$   
 $LAB^*_{Ge} = 57.1 \ -59.3 \ 19.2$   
 $rgb^*_{Ge} = 0.0 \ 1.0 \ 0.216$

**C<sub>e</sub> Blue green**

$LCH^*_{Ce} = 54.5 \ 47.7 \ 217.0$   
 $LAB^*_{Ce} = 54.5 \ -38.1 \ -28.7$   
 $rgb^*_{Ce} = 0.0 \ 1.0 \ 0.914$

**B<sub>e</sub> Blue**

$LCH^*_{Be} = 35.3 \ 46.9 \ 272.0$   
 $LAB^*_{Be} = 35.3 \ 1.6 \ -46.9$   
 $rgb^*_{Be} = 0.0 \ 0.274 \ 1.0$

**R<sub>e</sub> Red**

$LCH^*_{Re} = 45.1 \ 67.7 \ 25.0$   
 $LAB^*_{Re} = 45.1 \ 61.4 \ 28.6$   
 $rgb^*_{Re} = 1.0 \ 0.0 \ 0.244$

**M<sub>e</sub> Blue red**

$LCH^*_{Me} = 33.6 \ 55.2 \ 329.0$   
 $LAB^*_{Me} = 33.6 \ 47.3 \ -28.4$   
 $rgb^*_{Me} = 0.437 \ 0.0 \ 1.0$

**J<sub>s</sub> Yellow**

$LCH^*_{Js} = 82.8 \ 78.2 \ 90.0$   
 $LAB^*_{Js} = 82.8 \ 0.0 \ 78.2$   
 $rgb^*_{Js} = 1.0 \ 0.758 \ 0.0$

**G<sub>s</sub> Green**

$LCH^*_{Gs} = 56.9 \ 73.8 \ 150.0$   
 $LAB^*_{Gs} = 56.9 \ -63.9 \ 36.9$   
 $rgb^*_{Gs} = 0.0 \ 1.0 \ 0.0$

**C<sub>s</sub> Blue green**

$LCH^*_{Cs} = 55.9 \ 46.3 \ 210.0$   
 $LAB^*_{Cs} = 55.9 \ -40.1 \ -23.1$   
 $rgb^*_{Cs} = 0.0 \ 1.0 \ 0.847$

**B<sub>s</sub> Blue**

$LCH^*_{Bs} = 36.1 \ 47.0 \ 270.0$   
 $LAB^*_{Bs} = 36.1 \ 0.0 \ -47.0$   
 $rgb^*_{Bs} = 0.0 \ 0.294 \ 1.0$

**R<sub>s</sub> Red**

$LCH^*_{Rs} = 45.8 \ 70.3 \ 30.0$   
 $LAB^*_{Rs} = 45.8 \ 60.9 \ 35.1$   
 $rgb^*_{Rs} = 1.0 \ 0.0 \ 0.13$

**M<sub>s</sub> Blue red**

$LCH^*_{Ms} = 34.0 \ 55.6 \ 330.0$   
 $LAB^*_{Ms} = 34.0 \ 48.1 \ -27.8$   
 $rgb^*_{Ms} = 0.461 \ 0.0 \ 1.0$

**Notes to the CIELAB chroma diagrams (  $a^*_d, b^*_d$  ), (  $a^*_e, b^*_e$  ), (  $a^*_s, b^*_s$  )**

- For the  $rgb^*_d$ -input values the CIELAB data  $LCH^*_{Jd}$  and  $LAB^*_{Jd}$  have been measured.
- For the calculation of the standard hue angle  $h_{ab,s}$  use for any device values  $rgb^*_s$  the equation:  
$$h_{ab,s} = \text{atan} \left( \frac{r^*_d \cos(30) + g^*_d \cos(150)}{r^*_d \sin(30) + g^*_d \sin(150)} + b^*_d \sin(270) \right) \quad (1)$$
- For the 48 or 360 equally spaced standard hue angles  $h_{ab,z}$  of the colours of maximum chroma use the seven hue angles of the 60 degree colours  $z$ :  $h_{ab,z} = 30.0, 90.0, 150.0, 210.0, 270.0, 330.0, 390.0$  ( $i=0,5$ ) and the equations for a 48 and 360 step hue circle:  
$$h_{ab,ab,sj} = h_{ab,s} + j [h_{ab,s,i+1} - h_{ab,s,i}] / 8 \quad (i = 0, 1, \dots, 5; j = 0, 1, \dots, 7) \quad (2)$$
  
$$h_{360ab,sj} = h_{ab,s} + j [h_{ab,s,i+1} - h_{ab,s,i}] / 60 \quad (i = 0, 1, \dots, 5; j = 0, 1, \dots, 59) \quad (3)$$
- For the 48 or 360 elementary hue angles  $h_{ab,e}$  of the colours of maximum chroma use the seven hue angles of the elementary colours  $e$ :  $h_{ab,e} = 25.5, 92.3, 162.2, 217.0, 271.7, 328.6, 385.5$  ( $i=0,5$ ) and the equations for a 48 and 360 step elementary hue circle:  
$$h_{ab,ab,ej} = h_{ab,e} + j [h_{ab,e,i+1} - h_{ab,e,i}] / 8 \quad (i = 0, 1, \dots, 5; j = 0, 1, \dots, 7) \quad (4)$$
  
$$h_{360ab,ab,ej} = h_{ab,e} + j [h_{ab,e,i+1} - h_{ab,e,i}] / 60 \quad (i = 0, 1, \dots, 5; j = 0, 1, \dots, 59) \quad (5)$$
- For any elementary hue angle  $h_{ab,e}$  there is a well defined device hue angle  $h_{ab,d}$  see the following tables, columns 1 to 3.
- The values  $rgb^*_{de}$  produce the output of the device-independent elementary hues