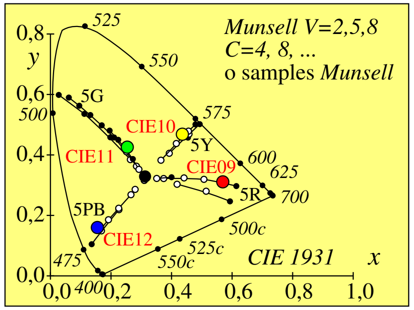
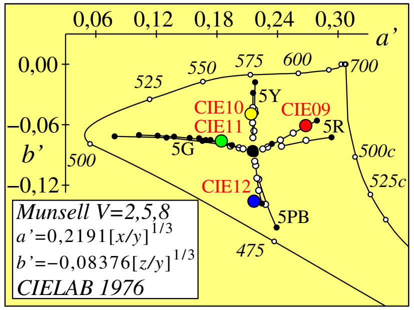
http://farbe.li.tu-berlin.de/ME98/ME98L0NA.TXT /.PS; start output
N: no 3D-linearization (OL) in file (F) or PS-startup (S), page 1/2

colour attributes of low and high colour metric		mode of colour mixture dichromatic	trichromatic
low colour- or valence metric		(for Y_ >= B_)	(for R_ >= G_ >= B_)
white value	W	B_	B_
black value	N	100 – Y_	100 – R_
chromatic value	C	Y_ – B_	R_ – B_
high colour- or sensation metric		(for Y*_ >= B*_)	(for R*_ >= G*_ >= B*_)
whiteness	W*	B*_	B*_
blackness	N*	100 – Y*_	100 – R*_
chromaticness	C*	Y*_ – B*_	R*_ – B*_

1–003000–L0 ME980–1N



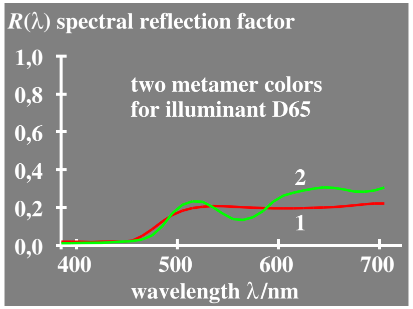
1–003000–L0 ME980–3N



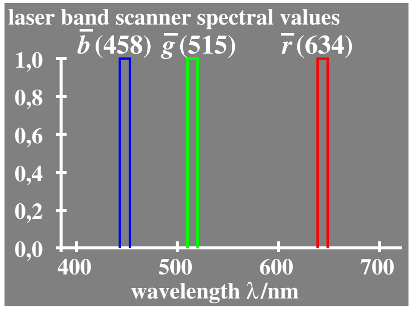
1–003000–L0 ME980–4N

colour valence metric (color data: linear relation to CIE 1931 data)		
linear color terms	**name and relationship to CIE tristimulus or chromaticity values**	**notes**
tristimulus values	X, Y, Z	
chromatic value	*linear chromatic value diagram (A, B)*	*n=D65*
red–green	$A = [\, X/Y - X_n/Y_n \,]\, Y = [\, a - a_n \,]\, Y$ $= [\, x/y - x_n/y_n \,]\, Y$	*(background)*
yellow–blue	$B = -\,0{,}4\, [\, Z/Y - Z_n/Y_n \,]\, Y = [\, b - b_n \,]\, Y$ $= -\,0{,}4\, [\, z/y - z_n/y_n \,]\, Y$	
radial	$C_{AB} = [\, A^2 + B^2 \,]^{1/2}$	
chromaticity	*linear chromaticity diagram (a, b)*	***compare to linear cone excitation***
red–green	$a = X/Y = x/y$	
yellow–blue	$b = -\,0{,}4\, [Z/Y] = -\,0{,}4\, [z/y]$	$L/(L+M)=P/(P+D)$
radial	$c_{ab} = [\, (a - a_n)^2 + (b - b_n)^2 \,]^{1/2}$	$S/(L+M)=T/(P+D)$

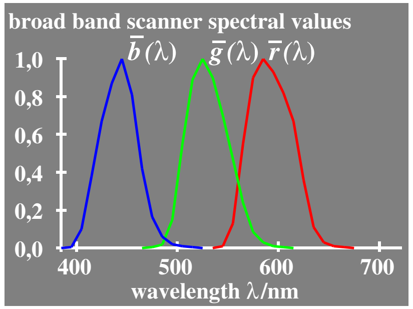
1–003000–L0 ME980–7N



1–003000–L0 ME741–7/ME981–1N



1–003000–L0 ME741–4/ME981–2N



1–003000–L0 ME741–5/ME981–3N

Colour rendering index R_i of two metameric BAM-scanner test colours

scanner	TC	colour rendering index	colour difference
broad band	1	82	3
	2	84	
laser	1	63	10
	2	69	
ideal	1	100	0
	2	100	

D65, colour adjustment with white paper

1–003000–L0 ME741–8/ME981–4N

higher colour metric (color data: nonlinear relation to CIE 1931 data)		
nonlinear color terms	**name and relationship with tristimulues or chromaticity values**	**notes**
lightness	$L^* = 116\, (\, Y/100 \,)^{1/3} - 16 \quad (Y > 0{,}8)$ approximation: $L^* = 100\, (Y/100)^{1/2{,}4} \; (Y > 0)$	CIELAB 1976
chroma	*nonlinear transfer of chromatic values A, B*	
red–green	$a^* = 500\, [\, (X/X_n)^{1/3} - (Y/Y_n)^{1/3} \,]$ $= 500\, (\, a' - a'_n \,)\, Y^{1/3}$	CIELAB 1976
yellow–blue	$b^* = 200\, [\, (Y/Y_n)^{1/3} - (Z/Z_n)^{1/3} \,]$ $= 500\, (\, b' - b'_n \,)\, Y^{1/3}$	CIELAB 1976 *n=D65*
radial	$C^*_{ab} = [\, a^{*2} + b^{*2} \,]^{1/2}$	*(background)*
chromaticity	*nonlinear transfer of chromaticities x/y, z/y*	*compare to log cone excitation*
red–green	$a' = (\, 1/X_n \,)^{1/3}\, (\, x/y \,)^{1/3}$ $= 0{,}2191\, (\, x/y \,)^{1/3}$ for D65	$\log[L/(L+M)]$ $= \log[P/(P+D)]$
yellow–blue	$b' = -\,0{,}4\, (\, 1/Z_n \,)^{1/3}\, (\, z/y \,)^{1/3}$ $= -\,0{,}08376\, (\, z/y \,)^{1/3}$ for D65	$\log[S/(L+M)]$
radial	$c'_{ab} = [\, (a' - a'_n)^2 + (b' - b'_n)^2 \,]^{1/2}$	$= \log[T/(P+D)]$

1–003000–L0 ME981–7N

TUB-test chart ME98; Computer graphics and colorimetry
Image series ME98, 3D=0, de=0

input: *rgb/cmyk –> rgb/cmyk*
output: no change

see similar files: http://farbe.li.tu-berlin.de/ME98/ME98.HTM
http://130.149.60.45/~farbmetrik or http://farbe.li.tu-berlin.de

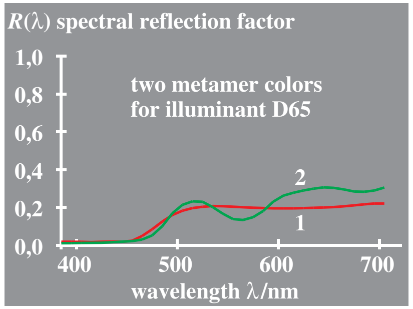
TUB registration: 20190801-ME98/ME98L0NA.TXT /.PS
application for measurement of display output

TUB material: code=rha4ta

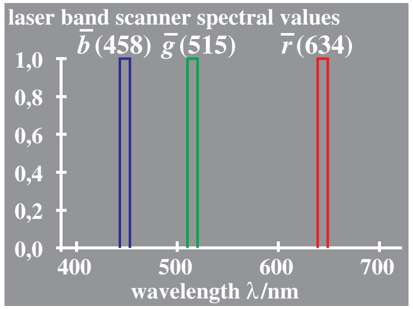
http://farbe.li.tu-berlin.de/ME98/ME98L0NA.TXT /.PS; transfer output
N: no 3D-linearization (OL) in file (F) or PS-startup (S), page 2/2

colour attributes of low and high colour metric	**mode of colour mixture** **dichromatic**	 **trichromatic**
low colour- or valence metric	(for $Y_d >= B_d$)	(for $R_d >= G_d >= B_d$)
white value *W*	B_d	B_d
black value *N*	$100 - Y_d$	$100 - R_d$
chromatic value *C*	$Y_d - B_d$	$R_d - B_d$
high colour- or sensation metric	(for $Y^*_d >= B^*_d$)	(for $R^*_d >= G^*_d >= B^*_d$)
whiteness *W**	B^*_d	B^*_d
blackness *N**	$100 - Y^*_d$	$100 - R^*_d$
chromaticness *C**	$Y^*_d - B^*_d$	$R^*_d - B^*_d$

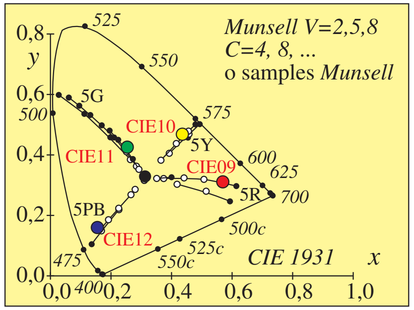
1–003100–L0 ME980–10



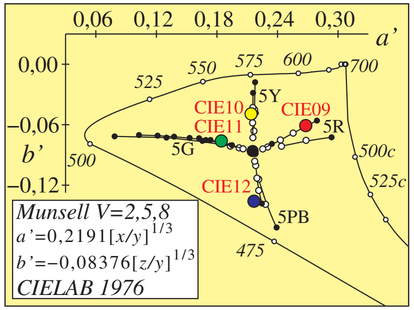
1–003100–L0 ME741–7/ME981–10



1–003100–L0 ME741–4/ME981–20

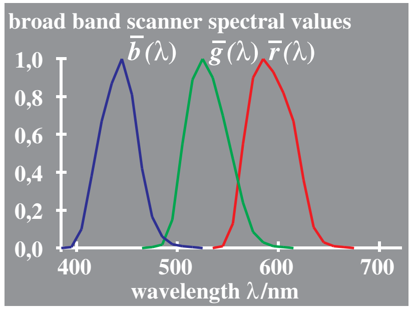


1–003100–L0 ME980–30



Munsell V=2,5,8
$a' = 0{,}2191 [x/y]^{1/3}$
$b' = -0{,}08376 [z/y]^{1/3}$
CIELAB 1976

1–003100–L0 ME980–40



1–003100–L0 ME741–5/ME981–30

Colour rendering index R_i of two metameric BAM-scanner test colours

scanner	TC	colour rendering index	colour difference
broad band	1	82	3
	2	84	
laser	1	63	10
	2	69	
ideal	1	100	0
	2	100	

D65, colour adjustment with white paper

1–003100–L0 ME741–8/ME981–40

colour valence metric (color data: linear relation to CIE 1931 data)

linear color terms	**name and relationship to CIE tristimulus or chromaticity values**	**notes**
tristimulus values	X, Y, Z	
chromatic value	*linear chromatic value diagram (A, B)*	*n=D65*
red–green	$A = [X / Y - X_n / Y_n] Y = [a - a_n] Y$ $= [x / y - x_n / y_n] Y$	*(background)*
yellow–blue	$B = - 0{,}4 [Z/Y - Z_n/Y_n] Y = [b - b_n] Y$ $= - 0{,}4 [z / y - z_n / y_n] Y$	
radial	$C_{AB} = [A^2 + B^2]^{1/2}$	
chromaticity	*linear chromaticity diagram (a, b)*	***compare to linear cone excitation***
red–green	$a = X / Y = x / y$	
yellow–blue	$b = - 0{,}4 [Z / Y] = - 0{,}4 [z / y]$	*L/(L+M)=P/(P+D)*
radial	$c_{ab} = [(a - a_n)^2 + (b - b_n)^2]^{1/2}$	*S/(L+M)=T/(P+D)*

1–003100–L0 ME980–70

higher colour metric (color data: nonlinear relation to CIE 1931 data)

nonlinear color terms	**name and relationship with tristimulues or chromaticity values**	**notes**
lightness	$L^* = 116 (Y / 100)^{1/3} - 16 \quad (Y > 0{,}8)$ approximation: $L^* = 100 (Y/100)^{1/2{,}4} \quad (Y > 0)$	CIELAB 1976
chroma	*nonlinear transfer of chromatic values A, B*	
red–green	$a^* = 500 [(X / X_n)^{1/3} - (Y / Y_n)^{1/3}]$ $= 500 (a' - a'_n) Y^{1/3}$	CIELAB 1976
yellow–blue	$b^* = 200 [(Y / Y_n)^{1/3} - (Z / Z_n)^{1/3}]$ $= 500 (b' - b'_n) Y^{1/3}$	CIELAB 1976 *n=D65*
radial	$C^*_{ab} = [a^{*2} + b^{*2}]^{1/2}$	*(background)*
chromaticity	*nonlinear transfer of chromaticities x/y, z/y*	*compare to log cone excitation*
red–green	$a' = (1 / X_n)^{1/3} (x / y)^{1/3}$ $= 0{,}2191 (x / y)^{1/3}$ for D65	log[*L* / (*L*+*M*)] = log[*P* / (*P*+*D*)]
yellow–blue	$b' = - 0{,}4 (1 / Z_n)^{1/3} (z / y)^{1/3}$ $= - 0{,}08376 (z / y)^{1/3}$ for D65	log[*S* / (*L*+*M*)]
radial	$c'_{ab} = [(a' - a'_n)^2 + (b' - b'_n)^2]^{1/2}$	= log[*T* / (*P*+*D*)]

1–003100–L0 ME981–70

TUB-test chart ME98; Computer graphics and colorimetry
Image series ME98, 3D=0, de=0, *L–cmyn6*

PE4300L_120830.TXT, 1080 colors, Separation cmyn6*
input: *rgb/cmyk –> rgb*$_d$
output: transfer to *rgb*$_d$

see similar files: http://farbe.li.tu-berlin.de/ME98/ME98.HTM
http://130.149.60.45/~farbmetrik or http://farbe.li.tu-berlin.de

TUB registration: 20190801-ME98/ME98L0NA.TXT /.PS
application for measurement of display output, no separation

TUB material: code=rha4ta

http://farbe.li.tu-berlin.de/ME98/ME98L0NA.TXT /.PS; start output
N: no 3D-linearization (OL) in file (F) or PS-startup (S), page 1/2

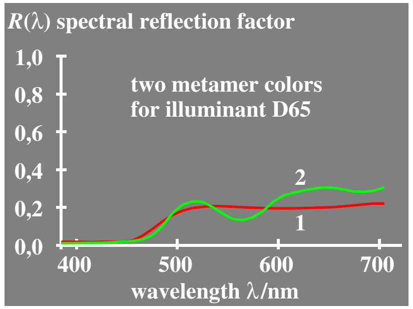
see similar files: http://farbe.li.tu-berlin.de/ME98/ME98.HTM
http://130.149.60.45/~farbmetrik or http://farbe.li.tu-berlin.de

TUB registration: 20190801-ME98/ME98L0NA.TXT /.PS
application for measurement of display output

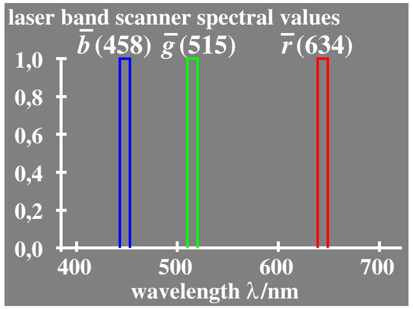
TUB material: code=rha4ta

colour attributes of low and high colour metric	**mode of colour mixture**	
	dichromatic	**trichromatic**
low colour- or valence metric	(for Y_- >= B_-)	(for R_- >= G_- >= B_-)
white value *W*	B_-	B_-
black value *N*	100 – Y_-	100 – R_-
chromatic value *C*	Y_- – B_-	R_- – B_-
high colour- or sensation metric	(for Y^*_- >= B^*_-)	(for R^*_- >= G^*_- >= B^*_-)
whiteness *W**	B^*_-	B^*_-
blackness *N**	100 – Y^*_-	100 – R^*_-
chromaticness *C**	Y^*_- – B^*_-	R^*_- – B^*_-

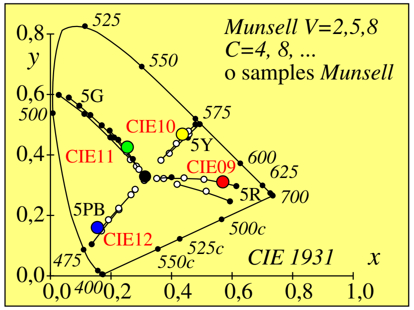
1–013000–L0 ME980–1N



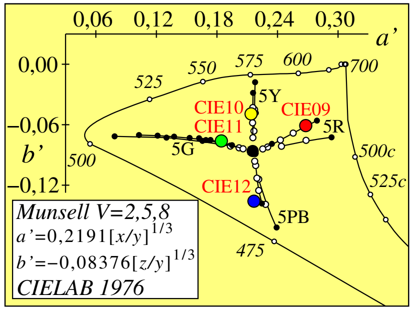
1–013000–L0 ME741–7/ME981–1N



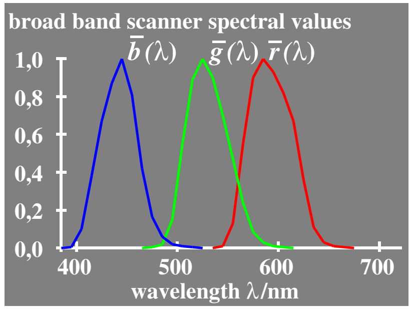
1–013000–L0 ME741–4/ME981–2N



1–013000–L0 ME980–3N



1–013000–L0 ME980–4N



1–013000–L0 ME741–5/ME981–3N

Colour rendering index R_i of two metameric BAM-scanner test colours

scanner	TC	colour rendering index	colour difference
broad band	1	82	3
	2	84	
laser	1	63	10
	2	69	
ideal	1	100	0
	2	100	

D65, colour adjustment with white paper

1–013000–L0 ME741–8/ME981–4N

colour valence metric (color data: linear relation to CIE 1931 data)

linear color terms	**name and relationship to CIE tristimulus or chromaticity values**	**notes**
tristimulus values	X, Y, Z	
chromatic value	*linear chromatic value diagram (A, B)*	*n=D65*
red–green	$A = [X / Y - X_n / Y_n] Y = [a - a_n] Y$ $= [x / y - x_n / y_n] Y$	*(background)*
yellow–blue	$B = - 0{,}4 [Z/Y - Z_n/Y_n] Y = [b - b_n] Y$ $= - 0{,}4 [z / y - z_n / y_n] Y$	
radial	$C_{AB} = [A^2 + B^2]^{1/2}$	
chromaticity	*linear chromaticity diagram (a, b)*	***compare to linear cone excitation***
red–green	$a = X / Y = x / y$	
yellow–blue	$b = - 0{,}4 [Z / Y] = - 0{,}4 [z / y]$	*L/(L+M)=P/(P+D)*
radial	$c_{ab} = [(a - a_n)^2 + (b - b_n)^2]^{1/2}$	*S/(L+M)=T/(P+D)*

1–013000–L0 ME980–7N

higher colour metric (color data: nonlinear relation to CIE 1931 data)

nonlinear color terms	**name and relationship with tristimulues or chromaticity values**	**notes**
lightness	$L^* = 116 (Y / 100)^{1/3} - 16 \quad (Y > 0{,}8)$ approximation: $L^*=100 (Y/100)^{1/2{,}4} \ (Y > 0)$	CIELAB 1976
chroma	*nonlinear transfer of chromatic values A, B*	
red–green	$a^* = 500 [(X / X_n)^{1/3} - (Y / Y_n)^{1/3}]$ $= 500 (a' - a'_n) Y^{1/3}$	CIELAB 1976
yellow–blue	$b^* = 200 [(Y / Y_n)^{1/3} - (Z / Z_n)^{1/3}]$ $= 500 (b' - b'_n) Y^{1/3}$	CIELAB 1976 *n=D65*
radial	$C^*_{ab} = [a^{*2} + b^{*2}]^{1/2}$	*(background)*
chromaticity	*nonlinear transfer of chromaticities x/y, z/y*	*compare to log cone excitation*
red–green	$a' = (1 / X_n)^{1/3} (x / y)^{1/3}$ $= 0{,}2191 (x / y)^{1/3}$ for D65	log[*L* / (*L*+*M*)] = log[*P* / (*P*+*D*)]
yellow–blue	$b' = - 0{,}4 (1 / Z_n)^{1/3} (z / y)^{1/3}$ $= - 0{,}08376 (z / y)^{1/3}$ for D65	log[*S* / (*L*+*M*)]
radial	$c'_{ab} = [(a' - a'_n)^2 + (b' - b'_n)^2]^{1/2}$	= log[*T* / (*P*+*D*)]

1–013000–L0 ME981–7N

TUB-test chart ME98; Computer graphics and colorimetry
Image series ME98, 3D=0, de=1

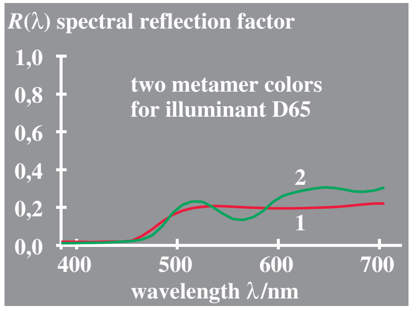
input: *rgb/cmyk* –> *rgb/cmyk*
output: no change

http://farbe.li.tu-berlin.de/ME98/ME98L0NA.TXT /.PS; transfer output
N: no 3D-linearization (OL) in file (F) or PS-startup (S), page 2/2

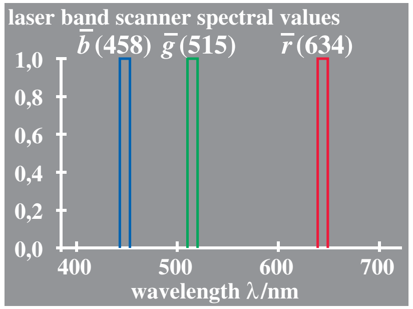
ME9801L

colour attributes of low and high colour metric	**mode of colour mixture**	
	dichromatic	**trichromatic**
low colour- or valence metric	(for $Y_e >= B_e$)	(for $R_e >= G_e >= B_e$)
white value *W*	B_e	B_e
black value *N*	$100 - Y_e$	$100 - R_e$
chromatic value *C*	$Y_e - B_e$	$R_e - B_e$
high colour- or sensation metric	(for $Y^*_e >= B^*_e$)	(for $R^*_e >= G^*_e >= B^*_e$)
whiteness *W**	B^*_e	B^*_e
blackness *N**	$100 - Y^*_e$	$100 - R^*_e$
chromaticness *C**	$Y^*_e - B^*_e$	$R^*_e - B^*_e$

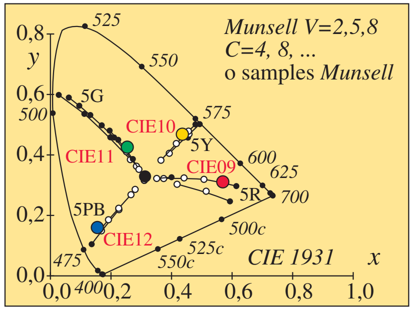
1–013100–L0 ME980–11



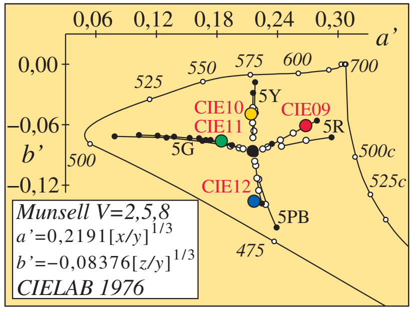
1–013100–L0 ME741–7/ME981–11



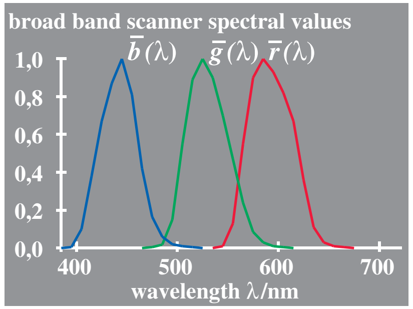
1–013100–L0 ME741–4/ME981–21



1–013100–L0 ME980–31



1–013100–L0 ME980–41



1–013100–L0 ME741–5/ME981–31

Colour rendering index R_i of two metameric BAM-scanner test colours

scanner	TC	colour rendering index	colour difference
broad band	1	82	3
	2	84	
laser	1	63	10
	2	69	
ideal	1	100	0
	2	100	

D65, colour adjustment with white paper

1–013100–L0 ME741–8/ME981–41

colour valence metric (color data: linear relation to CIE 1931 data)

linear color terms	**name and relationship to CIE tristimulus or chromaticity values**	**notes**
tristimulus values	X, Y, Z	
chromatic value	*linear chromatic value diagram (A, B)*	*n=D65*
red–green	$A = [X / Y - X_n / Y_n] Y = [a - a_n] Y$ $= [x / y - x_n / y_n] Y$	*(background)*
yellow–blue	$B = - 0{,}4 [Z/Y - Z_n/Y_n] Y = [b - b_n] Y$ $= - 0{,}4 [z / y - z_n / y_n] Y$	
radial	$C_{AB} = [A^2 + B^2]^{1/2}$	
chromaticity	*linear chromaticity diagram (a, b)*	***compare to linear cone excitation***
red–green	$a = X / Y = x / y$	
yellow–blue	$b = - 0{,}4 [Z / Y] = - 0{,}4 [z / y]$	*L/(L+M)=P/(P+D)*
radial	$c_{ab} = [(a - a_n)^2 + (b - b_n)^2]^{1/2}$	*S/(L+M)=T/(P+D)*

1–013100–L0 ME980–71

higher colour metric (color data: nonlinear relation to CIE 1931 data)

nonlinear color terms	**name and relationship with tristimulues or chromaticity values**	**notes**
lightness	$L^* = 116 (Y / 100)^{1/3} - 16 \quad (Y > 0{,}8)$ approximation: $L^*=100 (Y/100)^{1/2{,}4} \ (Y >0)$	CIELAB 1976
chroma	*nonlinear transfer of chromatic values A, B*	
red–green	$a^* = 500 [(X / X_n)^{1/3} - (Y / Y_n)^{1/3}]$ $= 500 (a' - a'_n) Y^{1/3}$	CIELAB 1976
yellow–blue	$b^* = 200 [(Y / Y_n)^{1/3} - (Z / Z_n)^{1/3}]$ $= 500 (b' - b'_n) Y^{1/3}$	CIELAB 1976 *n=D65*
radial	$C^*_{ab} = [a^{*2} + b^{*2}]^{1/2}$	*(background)*
chromaticity	*nonlinear transfer of chromaticities x/y, z/y*	*compare to log cone excitation*
red–green	$a' = (1 / X_n)^{1/3} (x / y)^{1/3}$ $= 0{,}2191 (x / y)^{1/3}$ for D65	log[*L* / (*L*+*M*)] = log[*P* / (*P*+*D*)]
yellow–blue	$b' = - 0{,}4 (1 / Z_n)^{1/3} (z / y)^{1/3}$ $= - 0{,}08376 (z / y)^{1/3}$ for D65	log[*S* / (*L*+*M*)]
radial	$c'_{ab} = [(a' - a'_n)^2 + (b' - b'_n)^2]^{1/2}$	= log[*T* / (*P*+*D*)]

1–013100–L0 ME981–71

TUB-test chart ME98; Computer graphics and colorimetry
Image series ME98, 3D=0, de=1, *L−cmyn6*

PE4300L_120830.TXT, 1080 colors, Separation cmyn6*
input: *rgb/cmyk −> rgb*$_e$
output: transfer to *rgb*$_e$

see similar files: http://farbe.li.tu-berlin.de/ME98/ME98.HTM
http://130.149.60.45/~farbmetrik or http://farbe.li.tu-berlin.de

TUB registration: 20190801-ME98/ME98L0NA.TXT /.PS
application for measurement of display output, no separation

TUB material: code=rha4ta