

**Elementary colour and CIE illuminant**      **CIELAB data, CIE tristimulus values and CIE chromaticity for the CIE standard illuminants D65 and D50 and the 2 degree observer**

CIE-test colour	Illuminant	$L^*$	$a^*$	$b^*$	$C^*_{ab}$	$h_{ab}$	$X$	$Y$	$Z$	$x$	$y$
09, Red $R$	D65	40,04	58,98	28,32	65,43	25,7	20,64	11,27	4,34	0,5693	0,3110
10, Yellow $Y$		81,30	-2,99	71,82	71,89	92,4	54,89	59,01	12,02	0,4359	0,4686
11, Green $G$		52,27	-42,40	13,64	44,54	162,2	12,15	20,38	15,34	0,2538	0,4258
12, Blue $B$		30,52	1,21	-46,35	46,37	271,5	6,24	6,45	27,59	0,1550	0,1601
09, Red $R$	D50	41,88	62,00	31,82	69,69	27,2	23,31	12,42	3,24	0,5982	0,3188
10, Yellow $Y$		81,97	1,81	71,59	71,61	88,5	58,84	60,24	9,50	0,4576	0,4685
11, Green $G$		51,62	-41,12	11,52	42,70	164,4	12,10	19,81	11,95	0,2759	0,4515
12, Blue $B$		29,20	-5,28	-49,34	49,62	263,9	5,25	5,92	21,25	0,1621	0,1825

AE780-1

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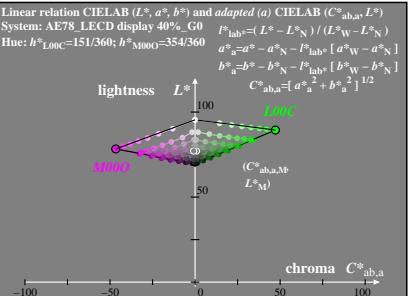
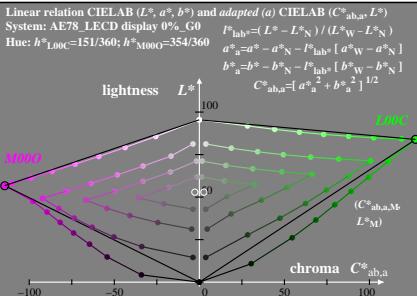
CIE-test colour	Illuminant	$L^*$	$a^*$	$b^*$	$C^*_{ab}$	$h_{ab}$	$X$	$Y$	$Z$	$x$	$y$
09, Red $R_e$	D65	40,04	58,98	28,32	65,43	25,7	20,64	11,27	4,34	0,5693	0,3110
10, Yellow $Y_e$		81,30	-2,99	71,82	71,89	92,4	54,89	59,01	12,02	0,4359	0,4686
11, Green $G_e$		52,27	-42,40	13,64	44,54	162,2	12,15	20,38	15,34	0,2538	0,4258
12, Blue $B_e$		30,52	1,21	-46,35	46,37	271,5	6,24	6,45	27,59	0,1550	0,1601
09, Red $R_e$	D50	41,88	62,00	31,82	69,69	27,2	23,31	12,42	3,24	0,5982	0,3188
10, Yellow $Y_e$		81,97	1,81	71,59	71,61	88,5	58,84	60,24	9,50	0,4576	0,4685
11, Green $G_e$		51,62	-41,12	11,52	42,70	164,4	12,10	19,81	11,95	0,2759	0,4515
12, Blue $B_e$		29,20	-5,28	-49,34	49,62	263,9	5,25	5,92	21,25	0,1621	0,1825

AE780-3

**Elementary colour and CIE illuminant**      **CIELAB data, CIE tristimulus values and CIE chromaticity for the CIE standard illuminants D65 and D50 and the 2 degree observer**

CIE-test colour	Illumin- ant	$L^*$	$a^*$	$b^*$	$C^*_{ab}$	$h_{ab}$	$X$	$Y$	$Z$	$x$	$y$
09, Red $R=R_e$	D65	40,04	58,98	28,32	65,43	25,7	20,64	11,27	4,34	0,5693	0,3110
10, Yellow $Y=Y_e$		81,30	-2,99	71,82	71,89	92,4	54,89	59,01	12,02	0,4359	0,4686
11, Green $G=G_e$		52,27	-42,40	13,64	44,54	162,2	12,15	20,38	15,34	0,2538	0,4258
12, Blue $B=B_e$		30,52	1,21	-46,35	46,37	271,5	6,24	6,45	27,59	0,1550	0,1601
09, Red $R=R_e$	D50	41,88	62,00	31,82	69,69	27,2	23,31	12,42	3,24	0,5982	0,3188
10, Yellow $Y=Y_e$		81,97	1,81	71,59	71,61	88,5	58,84	60,24	9,50	0,4576	0,4685
11, Green $G=G_e$		51,62	-41,12	11,52	42,70	164,4	12,10	19,81	11,95	0,2759	0,4515
12, Blue $B=B_e$		29,20	-5,28	-49,34	49,62	263,9	5,25	5,92	21,25	0,1621	0,1825

AE780-5



TUB-test chart AE78; Examples of colour metric CIE data of elementary colours and device output

**Agreement (Yes/No) of CIELAB  $h_{ab}$  with IEC 61966-2-1 and DIN 33872-X**

	$h_{ab}$ for reference: device colours				NOTES
	$R_d,sRGB$	$Y_d,sRGB$	$G_d,sRGB$	$B_d,sRGB$	visual standard deviation $v_{SD}$
definition for display output in IEC 61966-2-1	40 ± 4	103 ± 4	136 ± 4	306 ± 8	1 x $v_{SD}$
	40 ± 8	103 ± 8	136 ± 8	306 ± 16	2 x $v_{SD}$ see $h_{ab}$ data Table D.3
measurement of printer output $rgb$ in file	34 N(-2)	100 Y	146 N(+8)	264 N(-34)	1 x $v_{SD}$ ; 1 x Y
	34 Y	100 Y	146 N(+2)	264 N(-26)	2 x $v_{SD}$ ; 2 x Y see page 9 of RE61/RE61L0NP.PDF
measurement of printer output $cmy0$ in file	34 N(-2)	100 Y	153 N(+15)	300 Y	1 x $v_{SD}$ ; 2 x Y
	34 Y	100 Y	153 N(+9)	300 Y	2 x $v_{SD}$ ; 3 x Y see page 9 of RE63/RE63L0NP.PDF
	$h_{ab}$ für reference: elementary colours				NOTES
	$R_e$	$Y_e$	$G_e$	$B_e$	visual standard deviation $v_{SD}$
definition for any output in DIN 33872-X	26 ± 4	92 ± 4	162 ± 4	272 ± 8	1 x $v_{SD}$
	26 ± 8	92 ± 8	162 ± 8	272 ± 16	2 x $v_{SD}$ see $h_{ab}$ data Table D.2
measurement of printer output $rgb$ in file	34 N(+4)	100 N(+4)	146 N(-12)	264 N(-4)	1 x $v_{SD}$ ; 0 x Y
	34 Y	100 Y	146 N(-8)	264 Y	2 x $v_{SD}$ ; 3 x Y see page 9 of RE61/RE61L0NP.PDF
measurement of printer output $cmy0$ in file	34 N(+4)	100 N(+4)	153 N(-5)	300 N(+20)	1 x $v_{SD}$ ; 0 x Y
	34 Y	100 Y	153 N(-1)	300 N(+12)	2 x $v_{SD}$ ; 2 x Y see page 9 of RE63/RE63L0NP.PDF

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**Agreement (Yes/No) of CIELAB  $h_{ab}$  with IEC 61966-2-1 and DIN 33872-X**

	$h_{ab}$ for reference: device colours				NOTES
	$R_d,sRGB$	$Y_d,sRGB$	$G_d,sRGB$	$B_d,sRGB$	visual standard deviation $v_{SD}$
definition for display output in IEC 61966-2-1	40 ± 4	103 ± 4	136 ± 4	306 ± 8	1 x $v_{SD}$
	40 ± 8	103 ± 8	136 ± 8	306 ± 16	2 x $v_{SD}$ see $h_{ab}$ data Table D.3
measurement of printer output $rgb$ in file http://farbe.li.tu-berlin.de/RE61/RE61L0NP.PDF see data on page 9/33	34 N(-2)	100 Y	146 N(+8)	264 N(-34)	1 x $v_{SD}$ ; 1 x Y
	34 Y	100 Y	146 N(+2)	264 N(-26)	2 x $v_{SD}$ ; 2 x Y
measurement of printer output $cmy0$ in file http://farbe.li.tu-berlin.de/RE63/RE63L0NP.PDF see data on page 9/33	34 N(-2)	100 Y	153 N(+15)	300 Y	1 x $v_{SD}$ ; 2 x Y
	34 Y	100 Y	153 N(+9)	300 Y	2 x $v_{SD}$ ; 3 x Y
	$h_{ab}$ für reference: elementary colours				NOTES
	$R_e$	$Y_e$	$G_e$	$B_e$	visual standard deviation $v_{SD}$
definition for any output in DIN 33872-X	26 ± 4	92 ± 4	162 ± 4	272 ± 8	1 x $v_{SD}$
	26 ± 8	92 ± 8	162 ± 8	272 ± 16	2 x $v_{SD}$ see $h_{ab}$ data Table D.2
measurement of printer output $rgb$ in file http://farbe.li.tu-berlin.de/RE61/RE61L0NP.PDF see data on page 9/33	34 N(+4)	100 N(+4)	146 N(-12)	264 N(-4)	1 x $v_{SD}$ ; 0 x Y
	34 Y	100 Y	146 N(-8)	264 Y	2 x $v_{SD}$ ; 3 x Y
measurement of printer output $cmy0$ in file http://farbe.li.tu-berlin.de/RE63/RE63L0NP.PDF see data on page 9/33	34 N(+4)	100 N(+4)	153 N(-5)	300 N(+20)	1 x $v_{SD}$ ; 0 x Y
	34 Y	100 Y	153 N(-1)	300 N(+12)	2 x $v_{SD}$ ; 2 x Y

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input: w/rgb/cmyk → w/rgb/cmyk-  
output: no change