

5 steps of grey series black – white (N – W)	Colour space, colour space coordinates and PostScript operator calculations according to ISO/IEC 15775:1999-12			
Linear mixture between black and white in CIELAB colour space	<i>relative CIELAB</i>			
	<i>lab* w*</i> <i>setgray</i>	<i>lab*000n* = 000n*</i> <i>000n* setcmykcolor</i>	<i>lab*cmly0* = cmly0*</i> <i>cmly0* setcmykcolor</i>	<i>lab*olvr* = olvr*</i> <i>olvr* setrgbcolor</i>
1.00 N + 0.00 W (black N)	0.00	0.00 0.00 0.00 1.00	1.00 1.00 1.00 0.00	0.00 0.00 0.00 0.00
0.75 N + 0.25 W	0.25	0.00 0.00 0.00 0.75	0.75 0.75 0.75 0.00	0.25 0.25 0.25 0.00
0.50 N + 0.50 W	0.50	0.00 0.00 0.00 0.50	0.50 0.50 0.50 0.00	0.50 0.50 0.50 0.00
0.25 N + 0.75 W	0.75	0.00 0.00 0.00 0.25	0.25 0.25 0.25 0.00	0.75 0.75 0.75 0.00
0.00 N + 1.00 W (white W)	1.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	1.00 1.00 1.00 0.00

Part 1

YE920-1

5 steps of colour series black – white (N – W)	Colour space, colour space coordinates and PostScript operator calculations according to ISO/IEC 15775:1999-12			
Linear mixture between black and white in CIELAB colour space	<i>Standard CIELAB</i> <i>LAB*LAB* = LAB*</i> <i>LAB*a* setcolor</i>			
	<i>Standard CIELAB</i> <i>LAB*LAB* = LAB*</i> <i>LAB*a* setcolor</i>	<i>adapted CIELAB</i> <i>LAB*a*LAB*a* = LAB*a*</i> <i>LAB*a* setcolor</i>	<i>relative CIELAB</i> <i>lab*ncu* = ncu*</i> <i>ncu* setcolor</i>	<i>relative CIELAB</i> <i>lab*ncu* = ncu*</i> <i>ncu* setcolor</i>
1.00 N + 0.00 W (black N)	18.01 0.50 -0.40	18.01 0.00 0.00	1.00 0.00 r00j	
0.75 N + 0.25 W	37.35 0.10 0.80	37.35 0.00 0.00	0.75 0.00 r00j	
0.50 N + 0.50 W	56.70 -0.10 2.10	56.70 0.00 0.00	0.50 0.00 r00j	
0.25 N + 0.75 W	76.05 -0.50 -3.40	76.05 0.00 0.00	0.25 0.00 r00j	
0.00 N + 1.00 W (white W)	95.41 -0.98 4.76	95.41 0.00 0.00	0.00 0.00 r00j	

Part 2

YE920-3

5 steps of colour series cyan blue – white (C – W)	Colour space, colour space coordinates and PostScript operator calculations according to ISO/IEC 15775:1999-12			
Linear mixture between cyan blue and white in CIELAB colour space	<i>Standard CIELAB</i> <i>LAB*LAB* = LAB*</i> <i>LAB*a* setcolor</i>			
	<i>Standard CIELAB</i> <i>LAB*LAB* = LAB*</i> <i>LAB*a* setcolor</i>	<i>relative CIELAB</i> <i>lab*cmly0* = cmly0*</i> <i>cmly0* setcmykcolor</i>	<i>relative CIELAB</i> <i>lab*olvr* = olvr*</i> <i>olvr* setrgbcolor</i>	<i>relative CIELAB</i> <i>lab*ncu* = ncu*</i> <i>ncu* setcolor</i>
1.00 C + 0.00 W (cyan blue C)	58.62 -30.62 -42.74	1.00 0.00 0.00 0.00	0.00 1.00 1.00	
0.75 C + 0.25 W	67.82 -23.21 -30.86	0.75 0.00 0.00 0.00	0.25 1.00 1.00	
0.50 C + 0.50 W	77.02 -15.80 -18.98	0.50 0.00 0.00 0.00	0.50 1.00 1.00	
0.25 C + 0.75 W	86.21 -8.39 -7.11	0.25 0.00 0.00 0.00	0.75 1.00 1.00	
0.00 C + 1.00 W (white W)	95.41 -0.98 4.76	0.00 0.00 0.00 0.00	1.00 1.00 1.00	

Part 1

YE920-5

5 steps of colour series cyan blue – white (C – W)	Colour space, colour space coordinates and PostScript operator calculations according to ISO/IEC 15775:1999-12			
Linear mixture between cyan blue and white in CIELAB colour space	<i>adapted CIELAB</i> <i>LAB*a*LAB*a* = LAB*a*</i> <i>LAB*a* setcolor</i>			
	<i>adapted CIELAB</i> <i>LAB*a*LAB*a* = LAB*a*</i> <i>LAB*a* setcolor</i>	<i>relative CIELAB</i> <i>lab*rch* = rch*</i> <i>rch* setcolor</i>	<i>relative CIELAB</i> <i>lab*ncu* = ncu*</i> <i>ncu* setcolor</i>	<i>relative CIELAB</i> <i>lab*ncu* = ncu*</i> <i>ncu* setcolor</i>
1.00 C + 0.00 W (cyan blue C)	58.62 -30.34 -45.01	0.500 1.000 0.656	0.000 1.000 g21b	
0.75 C + 0.25 W	67.82 -22.75 -33.75	0.625 0.750 0.656	0.000 0.750 g21b	
0.50 C + 0.50 W	77.02 -15.17 -22.50	0.750 0.500 0.656	0.000 0.500 g21b	
0.25 C + 0.75 W	86.21 -7.58 -11.25	0.875 0.250 0.656	0.000 0.250 g21b	
0.00 C + 1.00 W (white W)	95.41 0.00 0.00	1.000 0.000 0.000	0.000 0.000 r00j	

Part 2

YE920-7

BAM-test chart no. YE92; Colour image reproduction
Colour definitions; equivalent colour data; image technology

Application of colour in daily life or in Colour Information Technology (IT)

Design, architecture, art, industrial products Measured for CIE standard illuminant D65	Colour Information Technology Measured for CIE illuminants D65 and D50
colour order system; name and coordinates: <i>RAL Design System (CIELAB)</i> <i>L*a*b*</i> : lightness, chroma, hue angle <i>Munsell Colour System</i> <i>VCH</i> , lightness (Value), Chroma, Hue text <i>Natural Colour System (NCS)</i> <i>ncu*</i> : relative blackness, relative chroma relative elementary hue text	Device system name and coordinates: Printer system (illuminants D50 or D65): <i>cmv</i> , content of "cyan", "magenta", "yellow" Display system (standard illuminant D65): <i>rgb'sRGB</i> , content of "red", "green", "blue" <i>No user friendly colour coordinates</i> <i>Nearly no connection to colour order systems</i>

Aim: define user friendly connection

New: Interpretation of the *rgb* colour data in the range 0 to 1 as elementary colour data *rgb's*

Linear relations between *relative* and *absolute* coordinates *lab** – *LAB**

rgb's – *L*a*b*C*_{ab}h_{ab}* (CIELAB)

rgb – *cmv*, *rgb's* – *cmv's* ("1-minus"-relation)

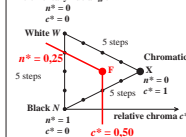
rgb's – *nce**, *rgb's* – *ncu**

relative coordinates *lab**: elementary redness *r's*, greenness *g's*, blueness *b's*, blackness *n**
chroma *c**, elementary hue *e**, elementary hue text *u**

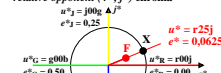
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User friendly colorimetric colour notation *ncu** or *nce** and linear relation to three *rgb's* data

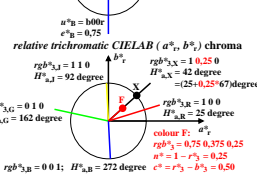
*n** relative blackness
*c** relative chroma
*u** elementary (unique) hue text
*e** elementary hue number
*E** elementary hue angle



relative opponent (*r's*, *j's*) chroma



relative trichromatic CIELAB (*a**, *b**) chroma



example for colour notation:

*ncu** = 0.25 0.50 r25j

or *nce** = 0.25 0.50 0.0625 (=0.25/4)

*rgb's*_{3C} = 0.10
*H*_{3C} = 162 degree
*rgb's*_{3X} = 1.10
*H*_{3X} = 92 degree
*rgb's*_{3B} = 1.00
*H*_{3B} = 25 degree
colour F: *rgb's* = 0.75 0.375 0.25
rgb's = 1 - *r's* = 0.25
*c** = *r's* - *b's* = 0.50

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input: w *setgray* / *rgb setrgbcolor*
output: no change compared to input