

5 steps of grey series black – white ( $N_d - W_d$ )	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	relative CIELAB								
	$lab^*w_d$ setgray	$lab^*000n_d=000n_d$ 000n_d setcmykcolor	$lab^*cmy0_d=cmy0_d$ cmy0_d setcmykcolor	$lab^*rgb_d=rgb_d$ rgb_d setrgbcolor					
1,00 $N_d$ +0,00 $W_d$ (Black $N_d$ )	0,00	0,00 0,00 0,00 1,00	1,00 1,00 1,00 0,00	0,00 0,00 0,00					
0,75 $N_d$ +0,25 $W_d$	0,25	0,00 0,00 0,00 0,75	0,75 0,75 0,75 0,00	0,25 0,25 0,25					
0,50 $N_d$ +0,50 $W_d$	0,50	0,00 0,00 0,00 0,50	0,50 0,50 0,50 0,00	0,50 0,50 0,50					
0,25 $N_d$ +0,75 $W_d$	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 $N_d$ +1,00 $W_d$ (white $W_d$ )	1,00	0,00 0,00 0,00 0,00	0,00 0,00 0,00 0,00	1,00 1,00 1,00					

SI250-1

5 steps of grey series black – white ( $N_d - W_d$ )	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	Standard CIELAB $LAB^*LAB^*_d = LAB^*_d$ $LAB^*_d$ setcolor			adapted CIELAB $LAB^*LAB^*_{a,d} = LAB^*_{a,d}$ $LAB^*_{a,d}$ setcolor			relative CIELAB $lab^*ncu^*_d = ncu^*_d$ $ncu^*_d$ setcolor		
1,00 $N_d$ +0,00 $W_d$ (Black $N_d$ )	18,01	0,50	-0,40	18,01	0,00	0,00	1,00	0,00	R00Y <sub>d</sub>
0,75 $N_d$ +0,25 $W_d$	37,35	0,10	0,80	37,35	0,00	0,00	0,75	0,00	R00Y <sub>d</sub>
0,50 $N_d$ +0,50 $W_d$	56,70	-0,10	2,10	56,70	0,00	0,00	0,50	0,00	R00Y <sub>d</sub>
0,25 $N_d$ +0,75 $W_d$	76,05	-0,50	-3,40	76,05	0,00	0,00	0,25	0,00	R00Y <sub>d</sub>
0,00 $N_d$ +1,00 $W_d$ (white $W_d$ )	95,41	-0,98	4,76	95,41	0,00	0,00	0,00	0,00	R00Y <sub>d</sub>

SI250-3

5 steps of colour series cyan blue – white ( $C_d - W_d$ )	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	Standard CIELAB $LAB^*LAB^*_d = LAB^*_d$ $LAB^*_d$ setcolor			relative CIELAB $lab^*cmy0_d = cmy0_d$ $cmy0_d$ setcmykcolor			relative CIELAB $lab^*rgb_d = rgb_d$ $rgb_d$ setrgbcolor		
1,00 $C_d$ +0,00 $W_d$ (cyan blue $C_d$ )	58,62	-30,62	-42,74	1,00	0,00	0,00 0,00	0,00	1,00	1,00
0,75 $C_d$ +0,25 $W_d$	67,82	-23,21	-30,86	0,75	0,00	0,00 0,00	0,25	1,00	1,00
0,50 $C_d$ +0,50 $W_d$	77,02	-15,80	-18,98	0,50	0,00	0,00 0,00	0,50	1,00	1,00
0,25 $C_d$ +0,75 $W_d$	86,21	-8,39	-7,11	0,25	0,00	0,00 0,00	0,75	1,00	1,00
0,00 $C_d$ +1,00 $W_d$ (white $W_d$ )	95,41	-0,98	4,76	0,00	0,00	0,00 0,00	1,00	1,00	1,00

SI250-5

5 steps of colour series cyan blue – white ( $C_d - W_d$ )	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	adapted CIELAB $LAB^*LAB^*_{a,d}=LAB^*_{a,d}$ $LAB^*_{a,d}$ setcolor			relative CIELAB $lab^*tch^*_d = tch^*_d$ $tch^*_d$ setcolor			relative CIELAB $lab^*ncu^*_d = ncu^*_d$ $ncu^*_d$ setcolor		
1,00 $C_d$ +0,00 $W_d$ (cyan blue $C_d$ )	58,62	-30,34	-45,01	0,500	1,000	0,656	0,000	1,000	G42C <sub>d</sub>
0,75 $C_d$ +0,25 $W_d$	67,82	-22,75	-33,75	0,625	0,750	0,656	0,000	0,750	G42C <sub>d</sub>
0,50 $C_d$ +0,50 $W_d$	77,02	-15,17	-22,50	0,750	0,500	0,656	0,000	0,500	G42C <sub>d</sub>
0,25 $C_d$ +0,75 $W_d$	86,21	-7,58	-11,25	0,875	0,250	0,656	0,000	0,250	G42C <sub>d</sub>
0,00 $C_d$ +1,00 $W_d$ (white $W_d$ )	95,41	0,00	0,00	1,000	0,000	0,000	0,000	0,000	R00Y <sub>d</sub>

SI250-7

grafico TUB-SI25; colour space and coordinates  
5 step colour scales and user friendly coordinates

## 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> $L^*C^*ab_{hab}$ , lightness, chroma, hue angle <i>Munsell Colour System</i> VCH, lightness (Value), Chroma, Hue text <i>Natural Colour System (NCS)</i> $ncu^*_e$ : relative blackness, relative chroma relative elementary hue text	Device system name and coordinates:  Printer system (illuminants D50 or D65): $cmy_d$ , content of "cyan, magenta, yellow"  Display system (standard illuminant D65): $rgb_d/sRGB_d$ , content of "red, green, blue"  <i>No user friendly colour coordinates</i> <i>Nearly no connection to colour order systems</i>

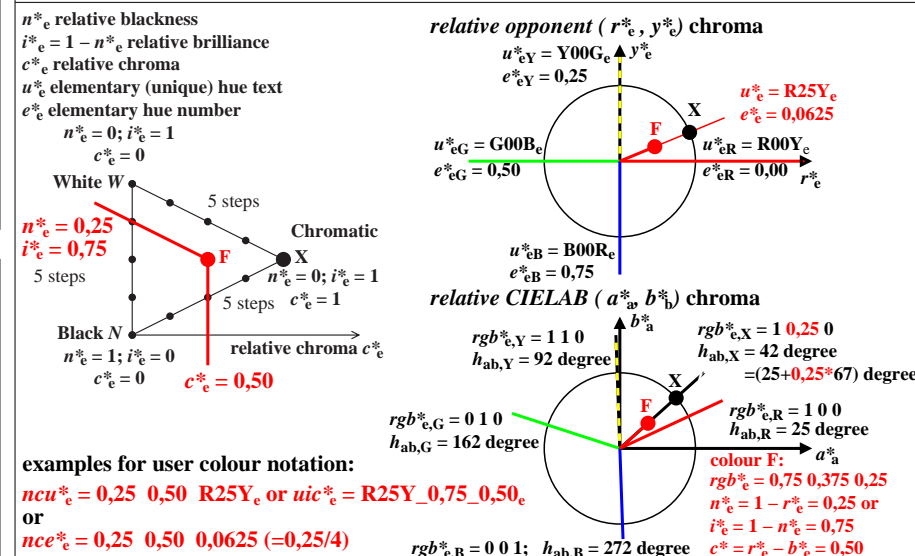
**Aim: define user friendly connection**

**New: Interpretation of the  $rgb$  colour data in the range 0 to 1 as elementary colour data  $rgb^*_e$**

Linear relations between *relative* and *absolute* coordinates  $lab^*_d - LAB^*_d$  and  $lab^*_e - LAB^*_e$   
 $rgb^*_d - (L^*a^*b^*C^*ab_{hab})_d$  and  $rgb^*_e - (L^*a^*b^*C^*ab_{hab})_e$  (CIELAB)  
 $rgb_d - cmy_d$ ,  $rgb^*_d - cmy^*_d$  and  $rgb_e - cmy_e$ ,  $rgb^*_e - cmy^*_e$  ("1-minus"-relation)  
 $rgb^*_d - ncu^*_d$ ,  $rgb^*_d - ncu^*_d$  and  $rgb^*_e - ncu^*_e$ ,  $rgb^*_e - ncu^*_e$   
*relative* coordinates  $lab^*_e$ : elementary redness  $r^*_e$ , greenness  $g^*_e$ , blueness  $b^*_e$ , blackness  $n^*_e$   
chroma  $c^*_d$ , elementary hue  $e^*_e$ , elementary hue text  $u^*_e$

SI251-3

User friendly colorimetric CIE colour notation  $ncu^*_e$  or  $uic^*_e$  or  $nce^*_e$  and linear relation to  $rgb^*_e$  data



SI251-7

immettere: w/rgb/cmyk -> w/rgb/cmyk<sub>d</sub>  
uscita: nessun cambiamento