

Equations: colorimetric data transfer from r		Equations: colorimetric data transfer from rgb_c to nce^{ϕ}_c data and LCH^{ϕ}_c data Given: rgb_c elementary colour data of any colour $rgb_c = lab^{\mu}rgb_c$ and of 48 step colour circle j =0 to 47 rgb_{Mcj} and CIELAB data L^{ϕ}_{Mcj} , $C^{\phi}_{ab,Mcj}$, $h_{ab,Mcj} = LCH^{\phi}_{Mcj}$, $data$ of elementary colour dim: calculate nce^{ϕ}_{a} , with $(0)ce^{-\phi}_{a}$, $ce^{+\phi}_{a}$, $ce^{+\phi}_{ab}$, $data$ into I oN Sd ata) and LCH^{ϕ}_{a} data of elementary colour			
Given: rgb _d device colour data of any colour rgb _d = la					
rgb _{Md,j} and CIELAB data L* _{Md,j} , C* _{ab,Md,j} ,					
Aim: calculate nce_d^* with $(0 \le n_d^* c_d^*, e_d^* \le 1)$ (simil	ar to NCS data) and LCH* _{a,d} data of the devie	ce colour		lar to NCS data) and <i>LCH</i> * _c data of elementary o	Jour
Data of a given device (d) colour			Data of a give elementary (e) colour		
relative chroma of the device colour	$c*_{d} = max [rgb_{d}] - min [rgb_{d}]$	(1)	relative chroma of the elementary colour	$c_e^* = max [rgb_e] - min [rgb_e]$	(1
relative blackness of the device colour	$n_{d}^{*} = 1 - max [rgb_{d}]$	(2)	relative blackness of the elementary colour	$n_e^* = 1 - max [rgb_e]$	(2)
relative triangle lightness of the device colour	$t_{d}^{*} = 1 - n_{d}^{*} - 0.5 c_{d}^{*}$	(3)	relative triangle lightness of the elementary colour	$t_{e}^{*} = 1 - n_{e}^{*} - 0.5 c_{e}^{*}$	(3)
relative red-green chroma in 6x60 degree system s	$a_{rs,d}^* = r_d \cos(30) + g_d \cos(150)$	(4)	relative red-green chroma in 4x90 degree system s	$a_{rs,e}^* = r_e \cos(0) + g_e \cos(180)$	(4)
relative yellow-blue chroma in 6x60 degree system s	$b_{rs,d}^* = r_d \sin(30) + g_d \sin(150) + b_d \sin(25)$	70) (5)	relative yellow-blue chroma in 4x90 degree system s	$b*_{rs,e} = r_e \sin(0) + g_e \sin(180) + b_e \sin(270)$	(5)
hue angle in 6x60 degree system s	$h_{ab,s,d} = arctan[b_{rs,d}^*/a_{rs,d}^*]$ (0<= $h_{ab,s,d}$)	d<=360) (6)	hue angle in 4x90 degree system s	$h_{ab,s,e} = arctan[b_{rs,e}^* / a_{rs,e}^*]$ (0<= $h_{ab,s,e}$ <=	360) (6
hue number in 6x60 degree system s	$e^*_d = h_{ab,s,d}/360$ (0<= e^*_d <=	1) (7)	hue number in 4x90 degree system s	$e^*_e = h_{ab,s,d}/360$ (0<= e^*_e <=1)	(7)
CIELAB hue angle in device system	$h_{ab,d} = $ function $[h_{ab,s,d}]$ (with table/eq	uations) (8)	CIELAB hue angle in elementary system	hab,a,e = function [hab,s,e] (with table/equat	ions) (8)
adapted CIELAB LCH*d data of maximum colour Md	$L^*Md = $ function $[h_{ab,d}]$ (with table/equations) (9)		CIELAB LCH*e data of maximum colour Me	L_{Me}^{*} = function $[h_{ab,e}]$ (with table/equate	ions) (9
	$C^*_{ab,Md}$ = function $[h_{ab,d}]$ (with table/eq	uations)(10)		$C_{ab,Me}^* = $ function $[h_{ab,e}]$ (with table/equat	ions)(10)
	$h_{ab,Md} = h_{ab,d}$	(11)		$h_{ab,Me} = h_{ab,e}$	(11)
relative lightness of maximum colour Md	$l_{Md} = [L_{Md} - L_{Nd}] / [L_{Wd} - L_{Nd}]$	(12)	relative lightness of maximum colour Me	$l_{Me} = [L_{Me} - L_{Ne}] / [L_{We} - L_{Ne}]$	(12)
relative lightness of the device colour	$l_{d}^{*} = t_{d}^{*} + l_{Md}^{*} c_{d}^{*} + 0.5 c_{d}^{*}$	(13)	relative lightness of the elementary colour	$l_{e}^{*} = t_{e}^{*} + l_{Me}^{*} c_{e}^{*} + 0.5 c_{e}^{*}$	(13)
CIELAB LCH*d data of the device colour	$L_{d}^{*} = l_{d}^{*} [L_{Wd}^{*} - L_{Nd}^{*}] + L_{Nd}^{*}$	(14)	CIELAB LCH*e data of the elementary colour	$L_{e}^{*} = l_{e}^{*} [L_{We}^{*} - L_{Ne}^{*}] + L_{Ne}^{*}$	(14)
	$C^{*}_{ab,d} = c^{*}_{d} C^{*}_{ab,Md}$	(15)		$C^*_{ab,e} = c^*_e C^*_{ab,Me}$	(15)
		SN870-3N		\$2	4871-3N
Equations: colorimetric data transfer from rgb_d to nce_d^* data and $LCH_{a,d}^*$ data			Equations: colorimetric data transfer from rgb_c to nce^*_c data and $LCH^*_{a,c}$ data		
Given: rgbd device colour data of any colour rgbd = lab*rgbd and of 48 step colour circle j=0 to 47			Given: rgbc elementary colour data of any colour rgbc = lab*rgbc and of 48 step colour circle j=0 to 47		
rgb _{Md,j} and adapted CIELAB data L* _{Md,j} , C* _{ab,a,Md,j} , h _{ab,a,Md,j} = LCH* _{a,Md,j}			rgb _{Me,j} and adapted CIELAB data L* _{Me,j} , C* _{ab,a,Me,j} , h _{ab,a,Me,j} = LCH* _{a,Me,j}		

Equations: colorimetric data transfer from rg	b_{d} to nce_{d}^{*} data and $LCH_{a,d}^{*}$ data		Equations: colorimetric data transfer from rgb_c to nce^+_c data and $LCH^+_{n,c}$ data Given: rgb_c elementary colour data of any colour $rgb_c = 1ab^+rgb_c$ and of 48 step colour circle $j=0$ to 47 $rgb_{m,c}$ j and adapted CIELAB data $L^+_{m,c}$ $C^+_{m,b}_{m,b}_{m,b}_{m,b}_{m,b}_{m,b} = LCH^+_{m,b}_{m,b}$				
Given: rgb _d device colour data of any colour rgb _d = lab							
rgb _{Md,j} and adapted CIELAB data L* _{Md,j} , C* ₂							
Aim: calculate nce^*_d with $(0 \le n^*_d, c^*_d, e^*_d \le 1)$ (similar	r to NCS data) and <i>LCH</i> * _{a,d} data of the device	colour	Aim: calculate nce_{c}^{*} with $(0 \le n_{c}^{*}, c_{c}^{*}, e_{c}^{*} \le 1)$ (similar	r to NCS data) and <i>LCH</i> * _{a,c} data of elementary	colour		
Data of a given device (d) colour			Data of a given elementary (e) colour				
relative chroma of the device colour	$c_d^* = max [rgb_d] - min [rgb_d]$	(1)	relative chroma of the elementary colour	$c_e^* = max [rgb_e] - min [rgb_e]$	(1)		
relative blackness of the device colour	$n_{d}^{*} = 1 - max [rgb_{d}]$	(2)	relative blackness of the elementary colour	$n_{e}^{*} = 1 - max [rgb_{e}]$	(2)		
relative triangle lightness of the device colour	$t^*_d = 1 - n^*_d - 0.5 c^*_d$	(3)	relative triangle lightness of the elementary colour	$t^*_e = 1 - n^*_e - 0.5 c^*_e$	(3)		
relative red-green chroma in 6x60 degree system s	$a_{rs,d}^* = r_d \cos(30) + g_d \cos(150)$	(4)	relative red-green chroma in 4x90 degree system s	$a_{rs,e}^* = r_e \cos(0) + g_e \cos(180)$	(4)		
relative yellow-blue chroma in 6x60 degree system s	$b_{rs,d} = r_d \sin(30) + g_d \sin(150) + b_d \sin(270)$) (5)	relative yellow-blue chroma in 4x90 degree system s	$b_{rs,e}^* = r_e \sin(0) + g_e \sin(180) + b_e \sin(270)$	(5)		
hue angle in 6x60 degree system s	$h_{ab,s,d} = arctan[b_{rs,d}^*/a_{rs,d}^*]$ (0<= $h_{ab,s,d}^<$	=360) (6)	hue angle in 4x90 degree system s	$h_{ab,s,e} = arctan[b_{rs,e} / a_{rs,e}^*]$ (0<= $h_{ab,s,e}$	=360) (6)		
hue number in 6x60 degree system s	$e_{d}^{*} = h_{ab,s,d}/360$ (0<= $e_{d}^{*}<=1$)	(7)	hue number in 4x90 degree system s	$e^*_e = h_{ab,s,e}/360$ (0<= e^*_e <=1)	(7)		
CIELAB hue angle in device system	$h_{ab,a,d} = $ function $[h_{ab,s,d}]$ (with table/equations)	ations) (8)	CIELAB hue angle in elementary system	$h_{ab,a,e} = $ function $[h_{ab,s,e}]$ (with table/equa	tions) (8)		
adapted CIELAB $LCH^{a}{}_{\mathrm{a},\mathrm{d}}$ data of maximum colour M_{d}	L^*_{Md} = function $[h_{ab,a,d}]$ (with table/equations)	ations) (9)	adapted CIELAB LCH*a,e data of maximum colour Me	$L^*_{Me} = $ function $[h_{ab,a,e}]$ (with table/equa	tions) (9)		
	$C^*_{ab,a,Md}$ = function [$h_{ab,a,d}$] (with table/equations)(10)			$C_{ab,a,Me}^{*}$ = function $[h_{ab,a,e}]$ (with table/equa	tions)(10)		
	$h_{ab,a,Md} = h_{ab,a,d}$	(11)		$h_{ab,a,Me} = h_{ab,a,e}$	(11)		
relative lightness of maximum colour Md	$l_{Md} = [L_{Md} - L_{Nd}] / [L_{Wd} - L_{Nd}]$	(12)	relative lightness of maximum colour Me	$l_{Me} = [L_{Me} - L_{Ne}] / [L_{We} - L_{Ne}]$	(12)		
relative lightness of the device colour	$l_{d}^{*} = t_{d}^{*} + l_{Md}^{*} c_{d}^{*} + 0.5 c_{d}^{*}$	(13)	relative lightness of the elementary colour	$l_{e}^{*} = t_{e}^{*} + l_{Me}^{*} c_{e}^{*} + 0.5 c_{e}^{*}$	(13)		
adapted CIELAB $LCH*_{a,d}$ data of the device colour	$L_{d}^{*} = l_{d}^{*} [L_{Wd}^{*} - L_{Nd}^{*}] + L_{Nd}^{*}$	(14)	adapted CIELAB LCH*a,e data of the elementary colour	$L_{e}^{*} = l_{e}^{*} [L_{We}^{*} - L_{Ne}^{*}] + L_{Ne}^{*}$	(14)		
	$C^*_{ab,a,d} = c^*_d C^*_{ab,a,Md}$	(15)		$C^*_{ab,a,d} = c^*_e C^*_{ab,a,Me}$	(15)		

TUB-test chart SN87; Colorimetric coordinate transfer Equations for the transfer between *rgb*, *LCH*nce**

-see similar files: http://130.149.60.45/~farbmetrik/SN87/SN87.HTM technical information: http://www.ps.bam.de or http://130.149.60.45/~farbmetrik

input: w/rgb/cmyk -> w/rgb/cmyk_ output: no change compared

TUB material: code=rha4ta