

Input: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 38/360 = 0.105$

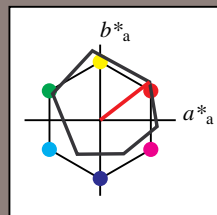
$lab^*tch$  and  $lab^*nch$

D65: hue O

LCH\*Ma: 48 83 38

olv\*Ma: 1.0 0.0 0.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$

Output: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 38/360 = 0.105$

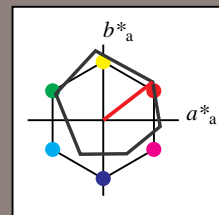
$lab^*tch$  and  $lab^*nch$

D65: hue O

LCH\*Ma: 48 83 38

olv\*Ma: 1.0 0.0 0.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

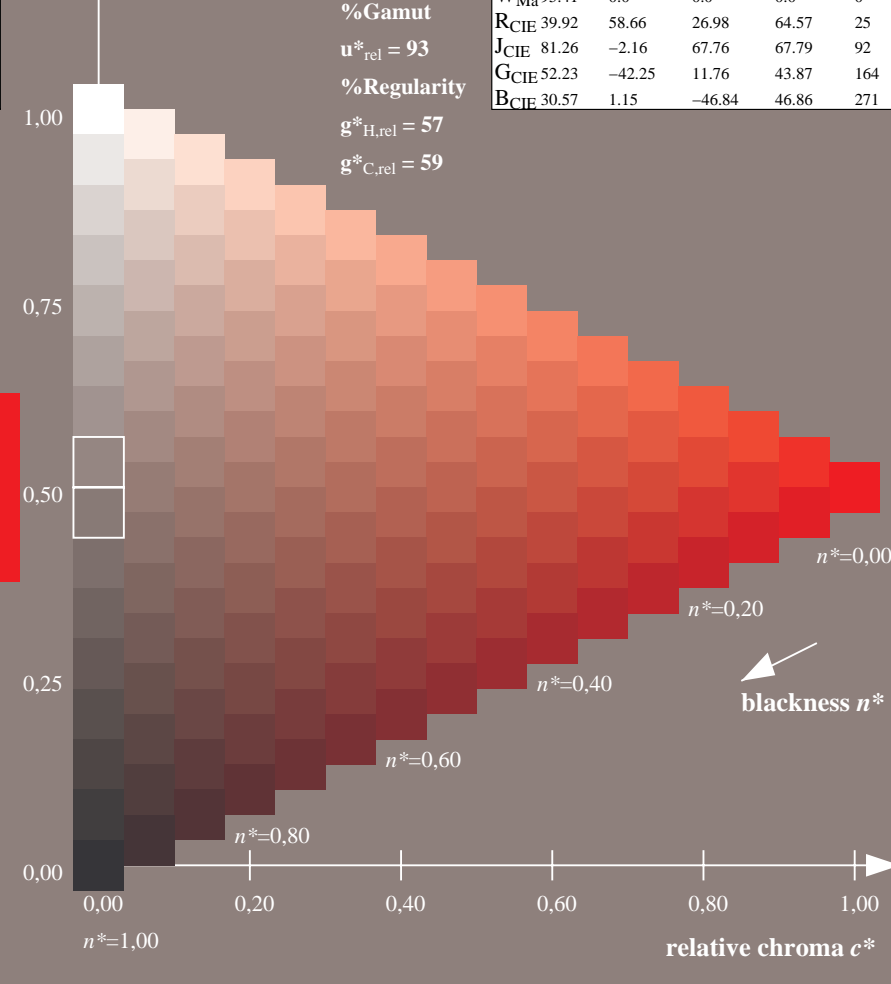
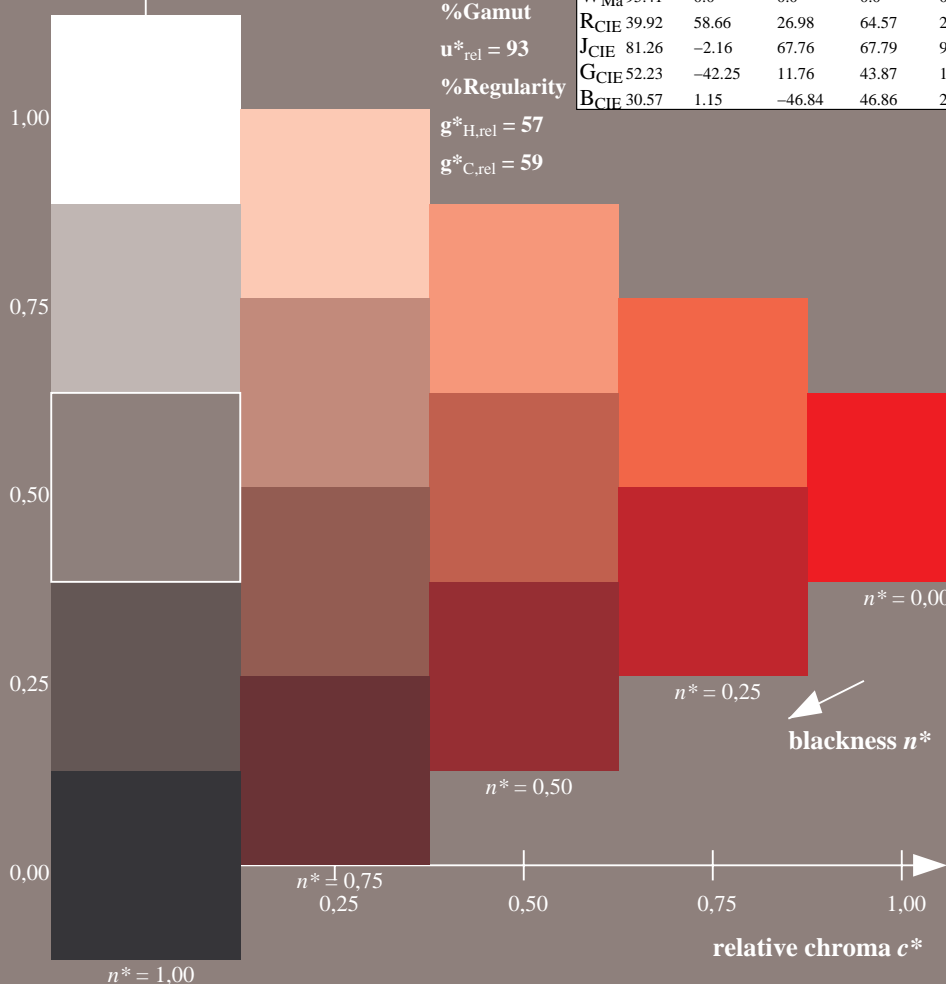
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



De220-7N, 5 step scales for constant CIELAB hue 38/360 = 0.105 (left)

16 step scales for constant CIELAB hue 38/360 = 0.105 (right)

Test chart 2 according to DIN 33872-2, Hue O, Page 1/11  
 Discrimination of 5 and 16 step colour scales, ORS18a

input:  $cmY0(->cmY0^*)setcmYcolor$   
 output: no change compared to input

See for similar files: <http://www.ps.bam.de/De22/>; [www.ps.bam.de/De22/](http://www.ps.bam.de/De22/); [www.ps.bam.de/De22/](http://www.ps.bam.de/De22/)  
 Technical information: <http://www.ps.bam.de/33872E> Version 2.1, io=1,1

BAM registration: 20080301-De22/10L/L22e00NP.PS /.PDF BAM material: code=rh4ta  
 application for output of monitor, data projector, or printer systems

Input: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 96/360 = 0.268$

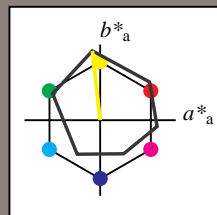
$lab^*tch$  and  $lab^*nch$

D65: hue Y

LCH\*Ma: 90 92 96

olv\*Ma: 1.0 1.0 0.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$

Output: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 96/360 = 0.268$

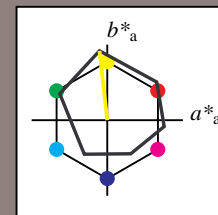
$lab^*tch$  and  $lab^*nch$

D65: hue Y

LCH\*Ma: 90 92 96

olv\*Ma: 1.0 1.0 0.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

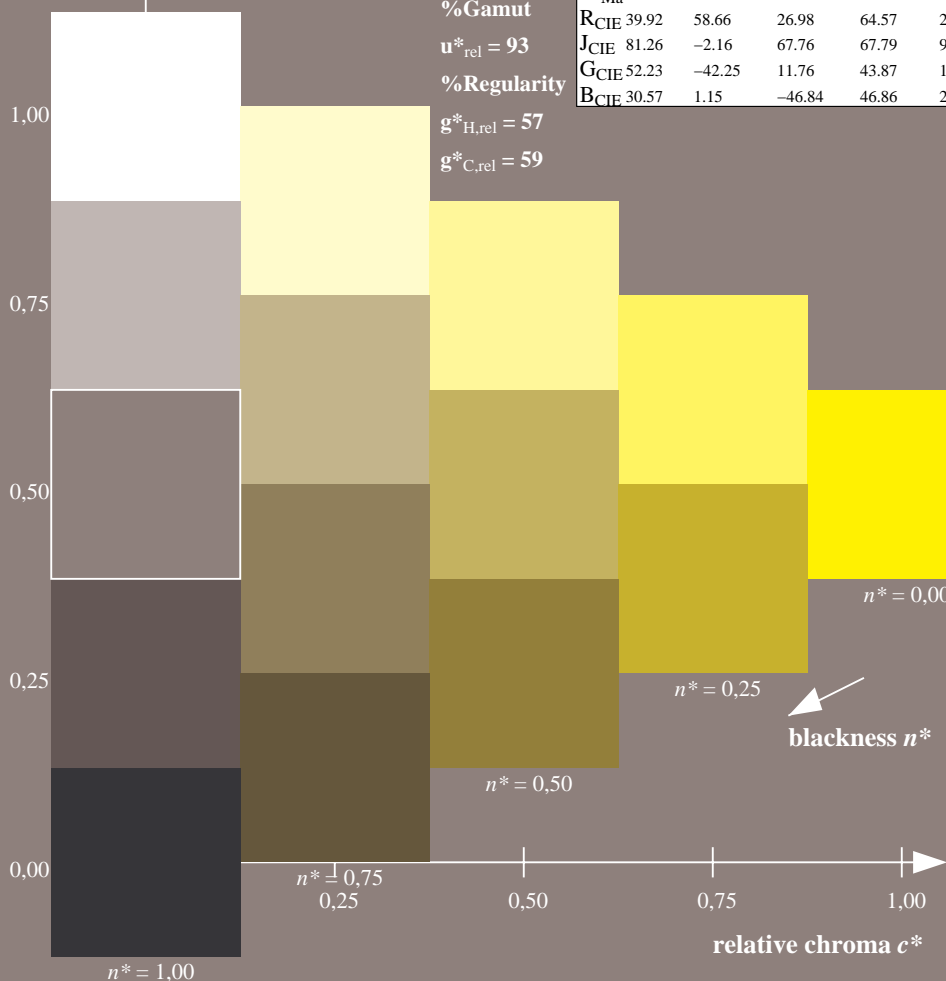
%Gamut

$u^*_{rel} = 93$

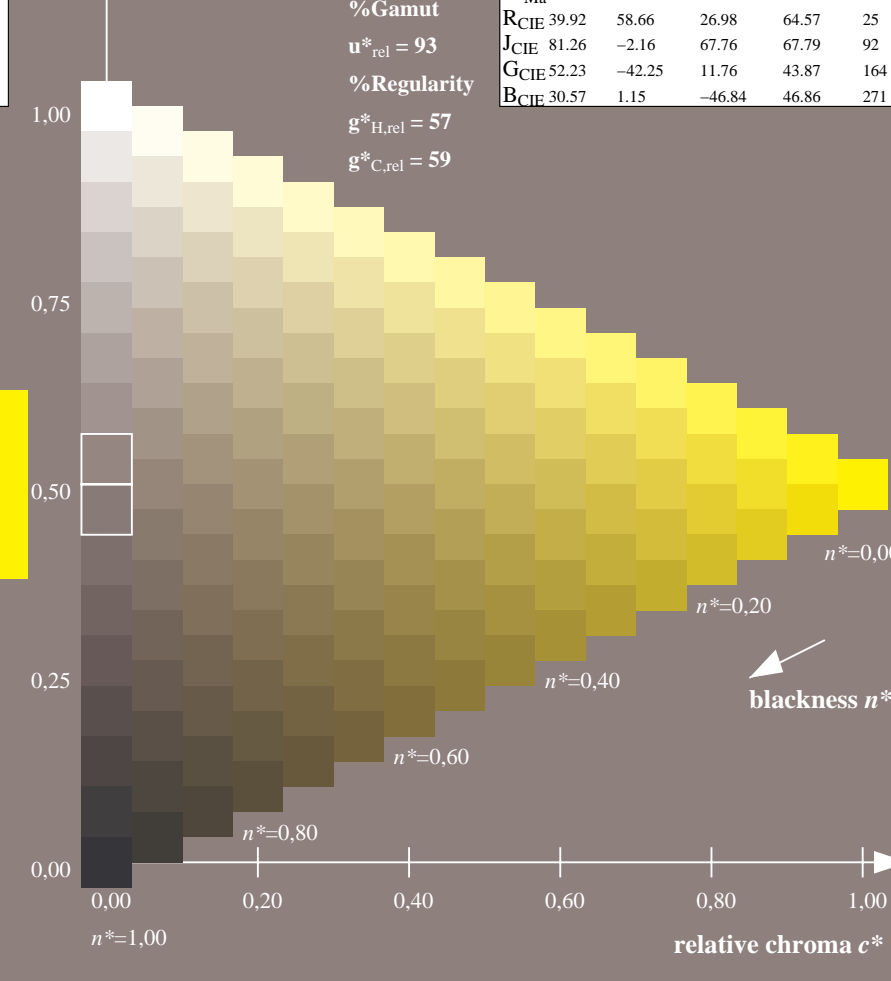
%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



De220-7N, 5 step scales for constant CIELAB hue 96/360 = 0.268 (left)



16 step scales for constant CIELAB hue 96/360 = 0.268 (right)

Test chart 2 according to DIN 33872-2, Hue Y, Page 2/11  
 Discrimination of 5 and 16 step colour scales, ORS18a

input:  $cmY0(->cmY0^*)setcmYkcolor$   
 output: no change compared to input

See for similar files: <http://www.ps.bam.de/De22/>; [www.ps.bam.de/De22/10L/L22e01NP.PS /.PDF](http://www.ps.bam.de/De22/10L/L22e01NP.PS /.PDF); [www.ps.bam.de/33872E](http://www.ps.bam.de/33872E)  
 Technical information: <http://www.ps.bam.de/33872E> Version 2.1, io=1,1

BAM registration: 20080301-De22/10L/L22e01NP.PS /.PDF  
 application for output of monitor, data projector, or printer systems  
 BAM material: code=rh4ta

Input: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 151/360 = 0.419$

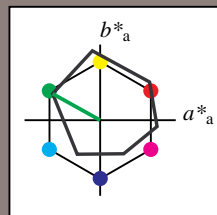
$lab^*tch$  and  $lab^*nch$

D65: hue L

LCH\*Ma: 51 72 151

olv\*Ma: 0.0 1.0 0.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

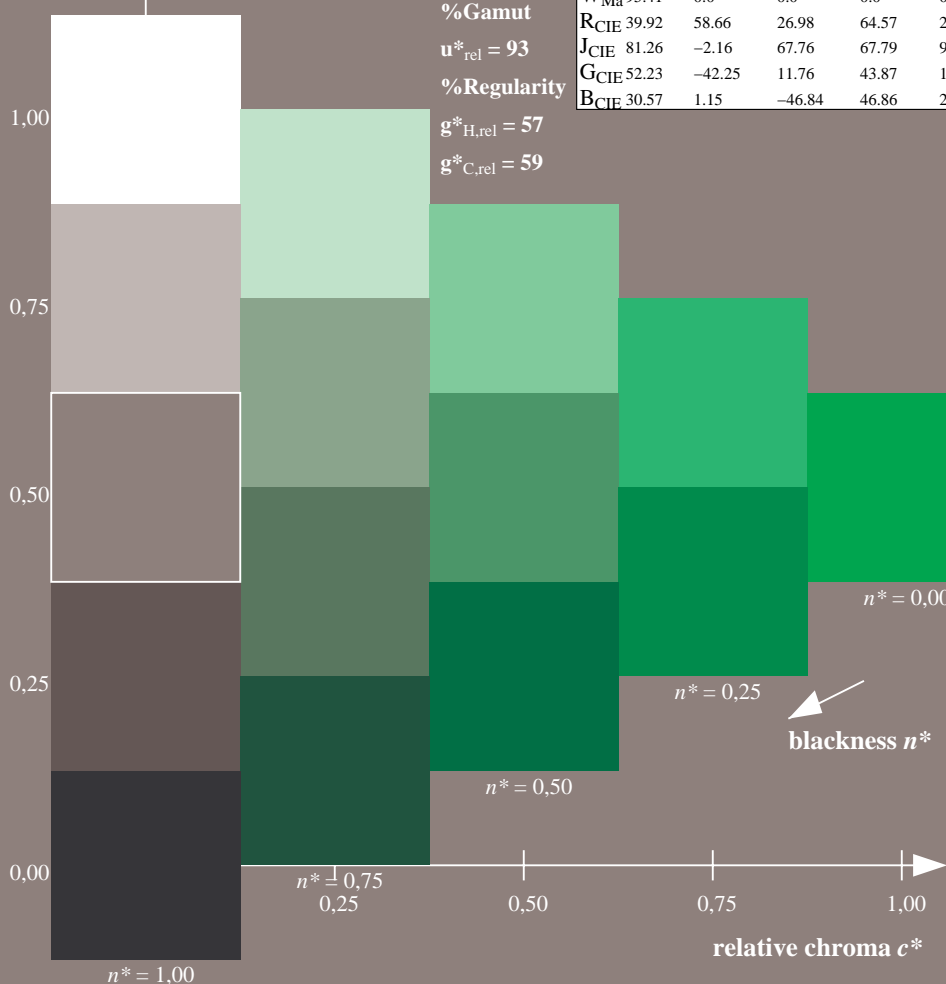
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



De220-7N, 5 step scales for constant CIELAB hue 151/360 = 0.419 (left)

Output: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 151/360 = 0.419$

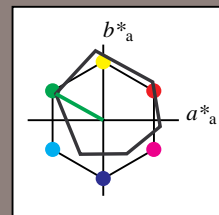
$lab^*tch$  and  $lab^*nch$

D65: hue L

LCH\*Ma: 51 72 151

olv\*Ma: 0.0 1.0 0.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

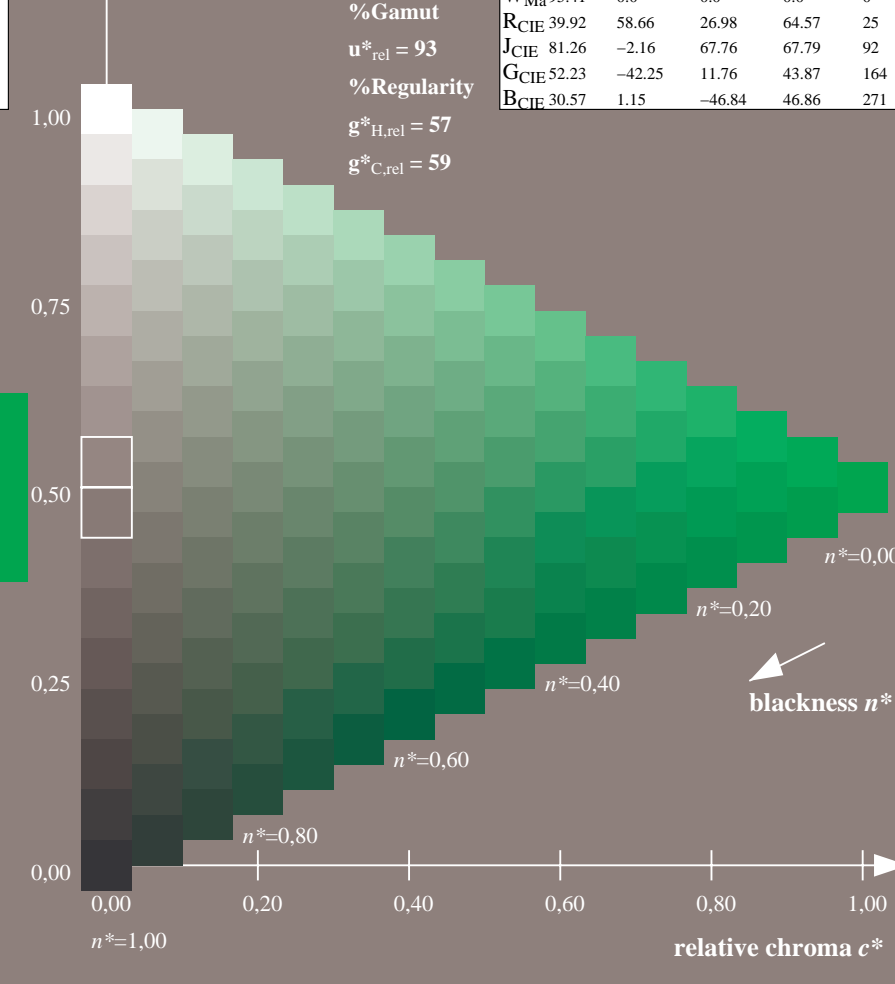
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



16 step scales for constant CIELAB hue 151/360 = 0.419 (right)

Input: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 236/360 = 0.656$

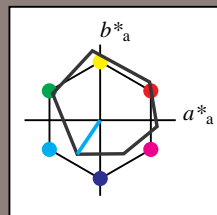
$lab^*tch$  and  $lab^*nch$

D65: hue C

LCH\*Ma: 59 54 236

olv\*Ma: 0.0 1.0 1.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

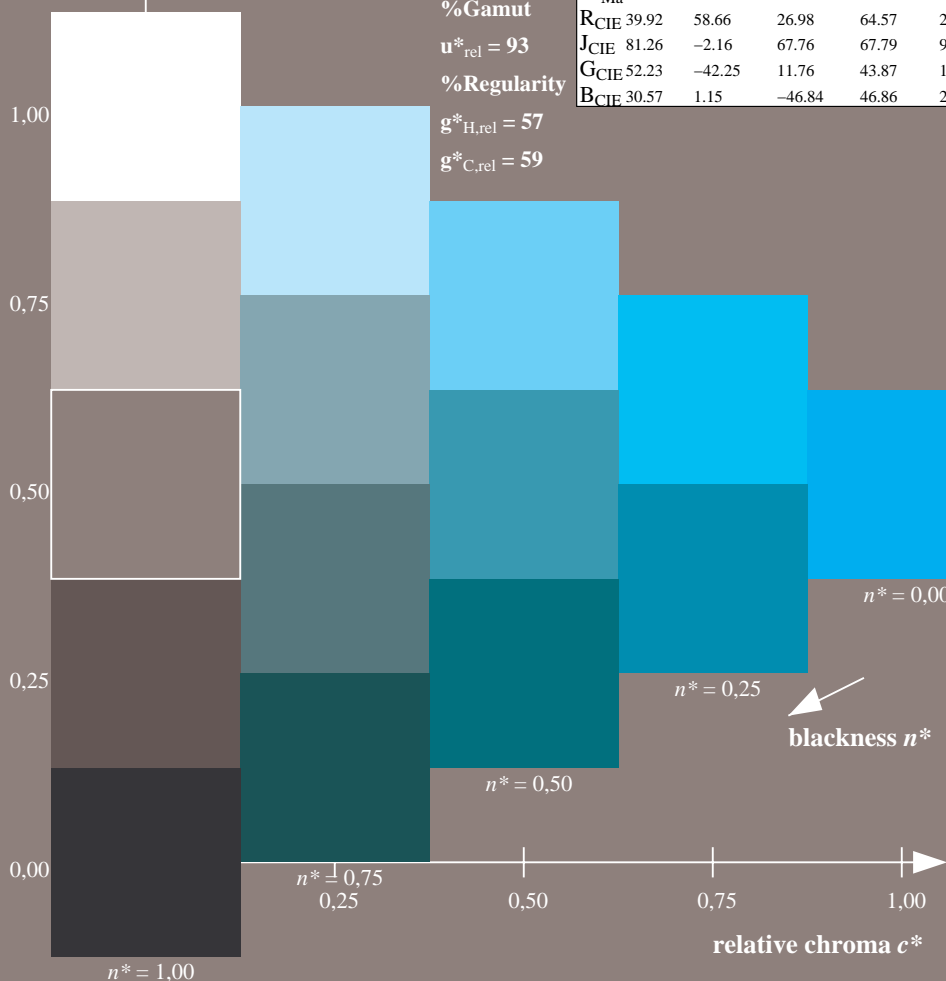
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



De220-7N, 5 step scales for constant CIELAB hue 236/360 = 0.656 (left)

Output: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 236/360 = 0.656$

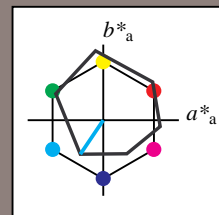
$lab^*tch$  and  $lab^*nch$

D65: hue C

LCH\*Ma: 59 54 236

olv\*Ma: 0.0 1.0 1.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

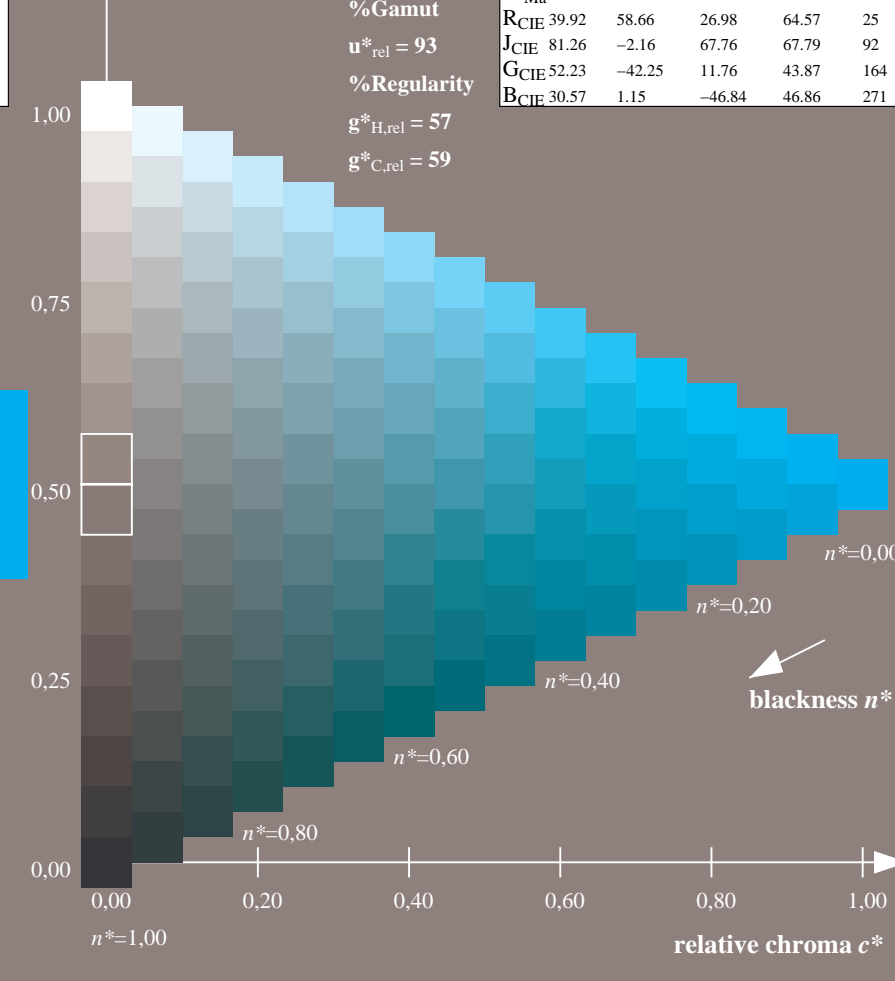
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



16 step scales for constant CIELAB hue 236/360 = 0.656 (right)

Test chart 2 according to DIN 33872-2, Hue C, Page 4/11  
 Discrimination of 5 and 16 step colour scales, ORS18a

input:  $cm\dot{y}0(-\rightarrow cm\dot{y}0^*)setcm\dot{y}kcolor$   
 output: no change compared to input

See for similar files: <http://www.ps.bam.de/De22/>; [www.ps.bam.de/De22/10L/L22e03NP.PS/](http://www.ps.bam.de/De22/10L/L22e03NP.PS/); [www.ps.bam.de/33872E](http://www.ps.bam.de/33872E)  
 Technical information: <http://www.ps.bam.de/33872E> Version 2.1, io=1,1

BAM registration: 20080301-De22/10L/L22e03NP.PS /.PDF  
 application for output of monitor, data projector, or printer systems  
 BAM material: code=rhadata

Input: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 305/360 = 0.847$

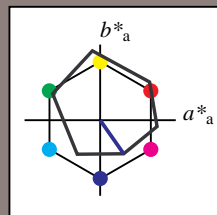
$lab^*tch$  and  $lab^*nch$

D65: hue V

LCH\*Ma: 26 54 305

olv\*Ma: 0.0 0.0 1.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

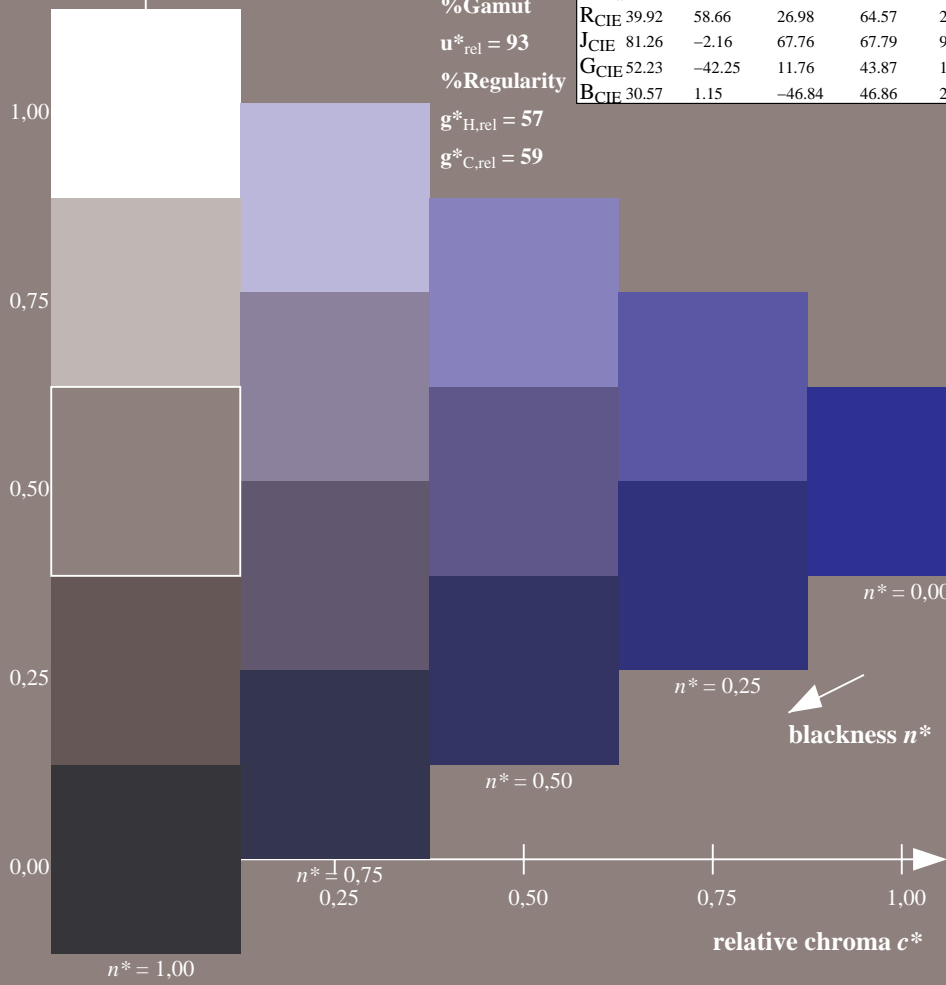
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



De220-7N, 5 step scales for constant CIELAB hue 305/360 = 0.847 (left)

Output: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 305/360 = 0.847$

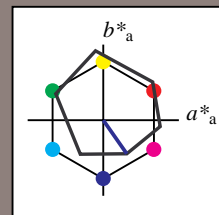
$lab^*tch$  and  $lab^*nch$

D65: hue V

LCH\*Ma: 26 54 305

olv\*Ma: 0.0 0.0 1.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

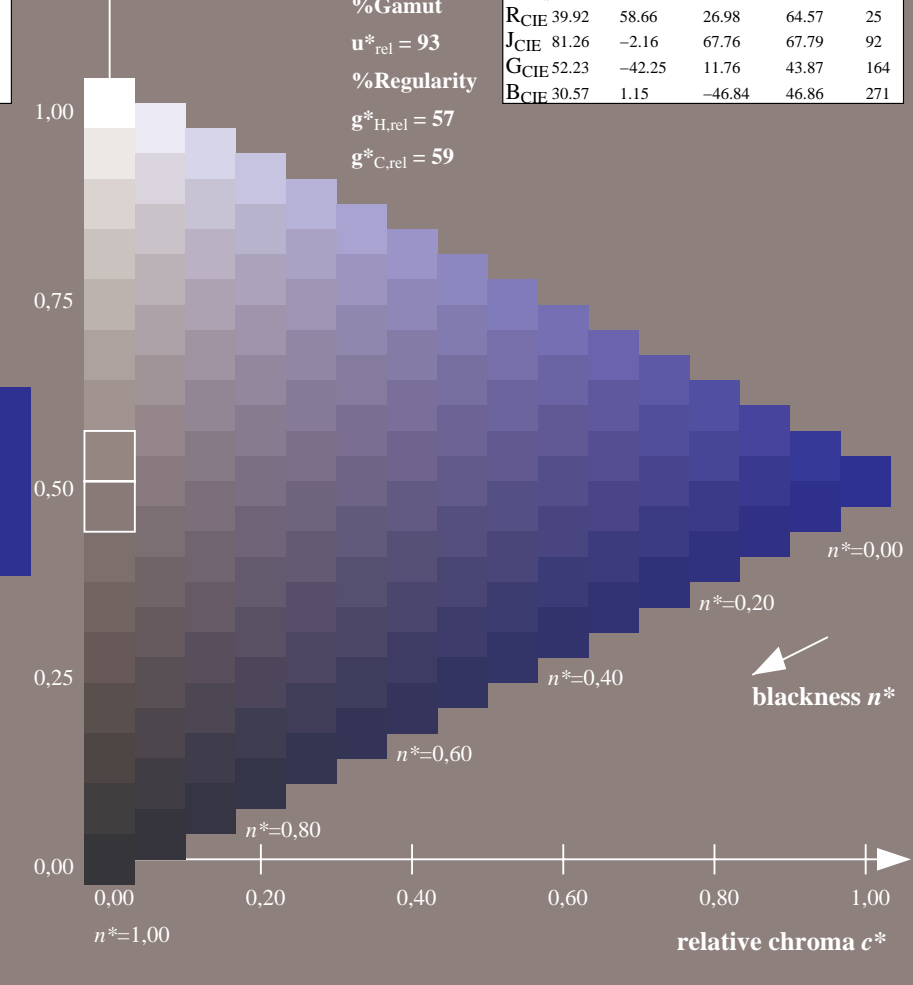
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



16 step scales for constant CIELAB hue 305/360 = 0.847 (right)

Test chart 2 according to DIN 33872-2, Hue V, Page 5/11  
 Discrimination of 5 and 16 step colour scales, ORS18a

input:  $cmY0(->cmY0^*)setcmYcolor$   
 output: no change compared to input

See for similar files: <http://www.ps.bam.de/De22/>; [www.ps.bam.de/De.HTM](http://www.ps.bam.de/De.HTM)  
 Technical information: <http://www.ps.bam.de/33872E> Version 2.1, io=1,1

BAM registration: 20080301-De22/10L/L22e04NP.PS /.PDF BAM material: code=rh4ta  
 application for output of monitor, data projector, or printer systems

Input: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 354/360 = 0.982$

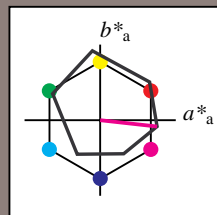
$lab^*tch$  and  $lab^*nch$

D65: hue M

LCH\*Ma: 48 76 354

olv\*Ma: 1.0 0.0 1.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

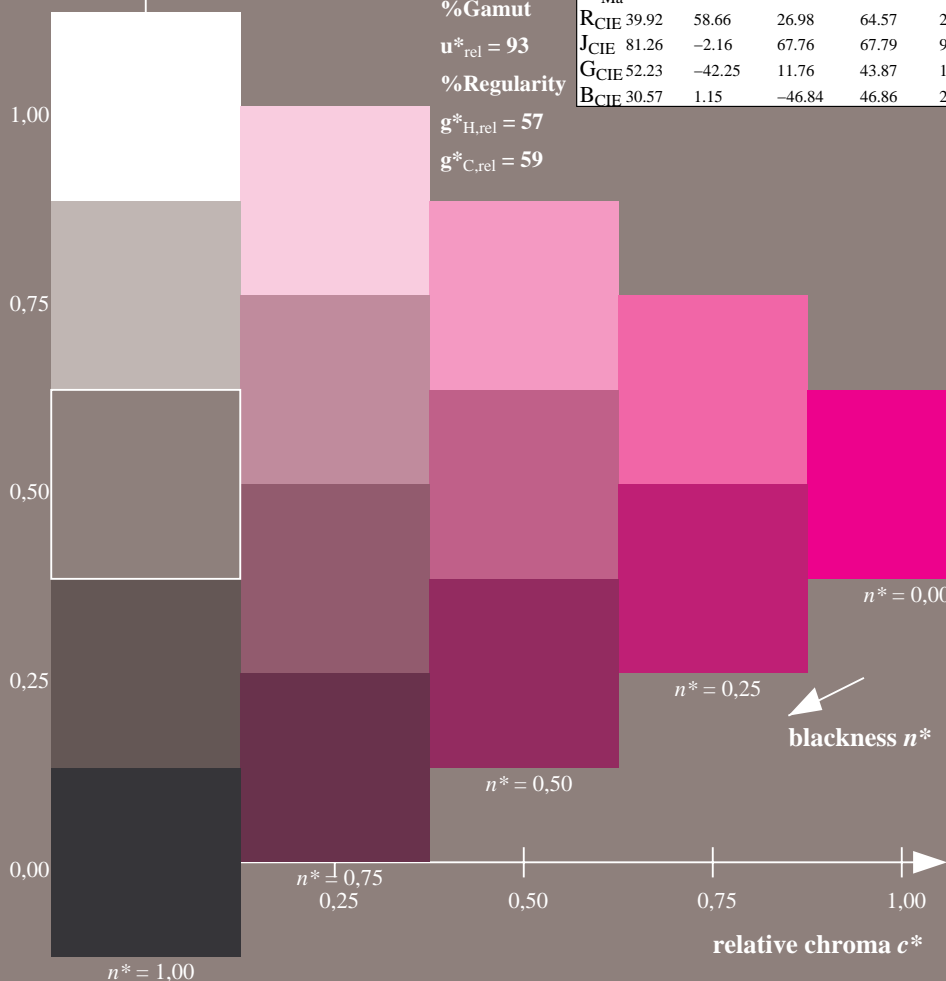
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



De220-7N, 5 step scales for constant CIELAB hue 354/360 = 0.982 (left)

Output: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 354/360 = 0.982$

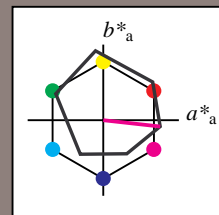
$lab^*tch$  and  $lab^*nch$

D65: hue M

LCH\*Ma: 48 76 354

olv\*Ma: 1.0 0.0 1.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

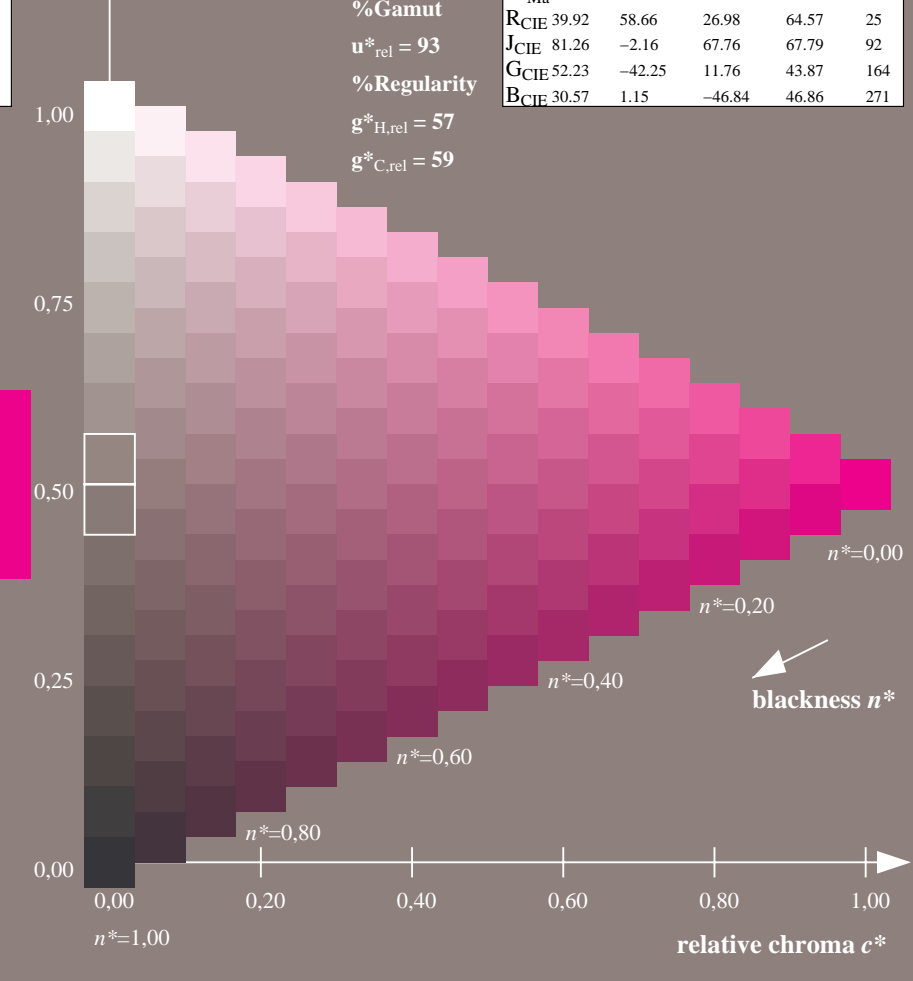
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



16 step scales for constant CIELAB hue 354/360 = 0.982 (right)

Test chart 2 according to DIN 33872-2, Hue M, Page 6/11  
 Discrimination of 5 and 16 step colour scales, ORS18a

input:  $cmY0(->cmY0^*)setcmYcolor$   
 output: no change compared to input

See for similar files: <http://www.ps.bam.de/De22/>; [www.ps.bam.de/De.HTM](http://www.ps.bam.de/De.HTM)  
 Technical information: <http://www.ps.bam.de/33872E> Version 2.1, io=1,1

BAM registration: 20080301-De22/10L/L22e05NP.PS /.PDF  
 application for output of monitor, data projector, or printer systems

BAM material: code=rh4ta

Input: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 25/360 = 0.069$

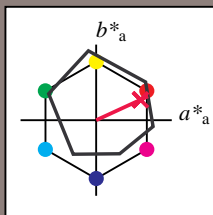
$lab^*tch$  and  $lab^*nch$

D65: hue R

LCH\*Ma: 48 75 25

olv\*Ma: 1.0 0.0 0.32

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

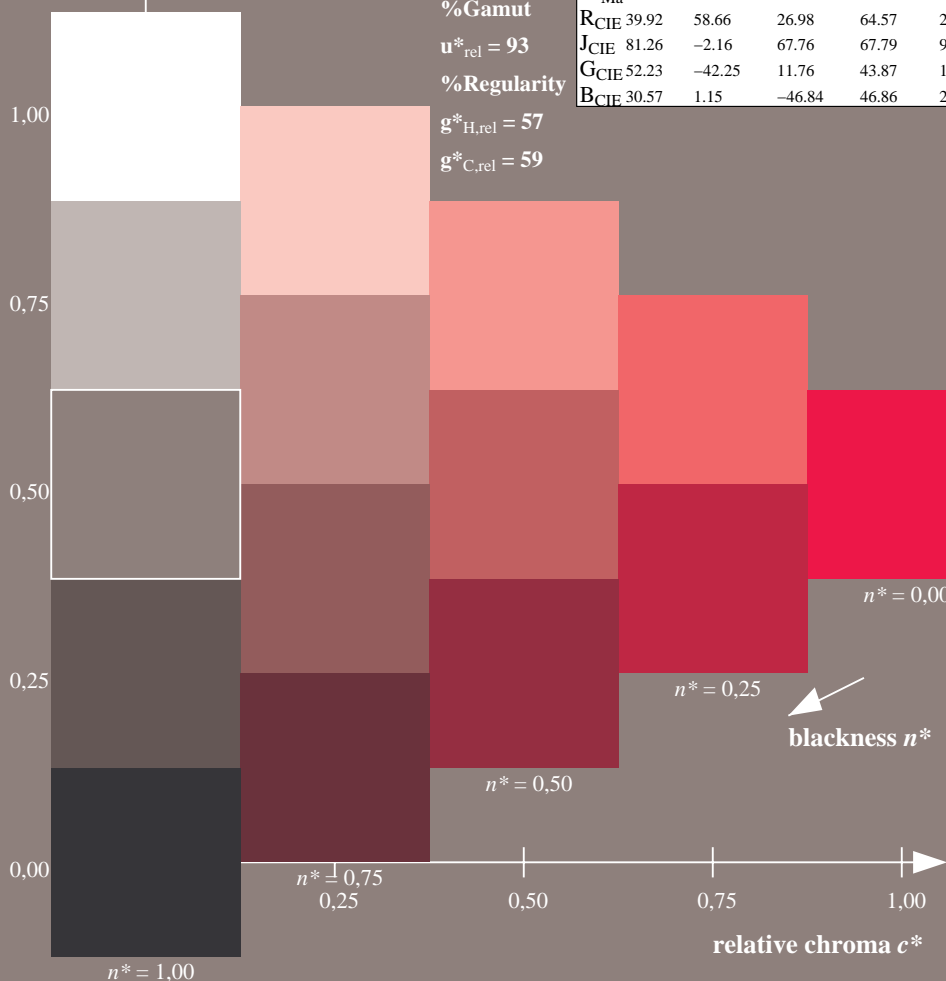
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



De220-7N, 5 step scales for constant CIELAB hue 25/360 = 0.069 (left)

Output: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 25/360 = 0.069$

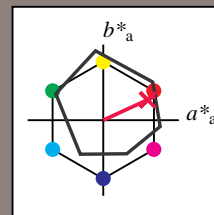
$lab^*tch$  and  $lab^*nch$

D65: hue R

LCH\*Ma: 48 75 25

olv\*Ma: 1.0 0.0 0.32

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

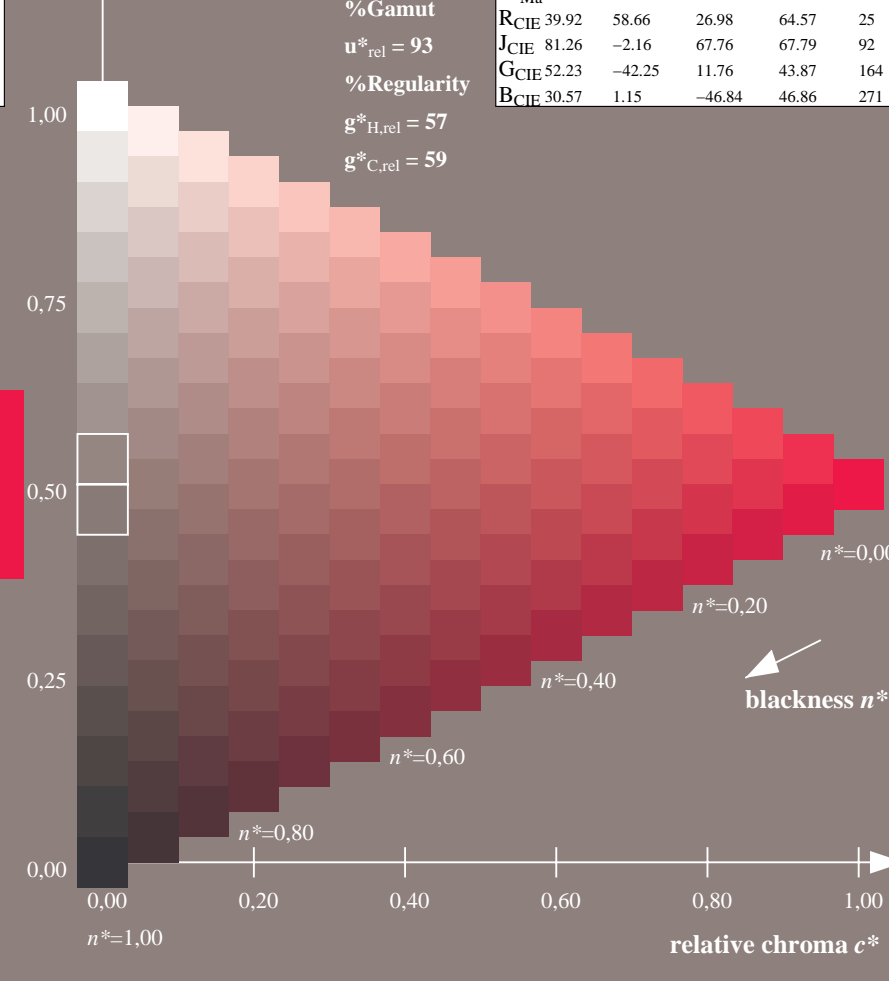
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



16 step scales for constant CIELAB hue 25/360 = 0.069 (right)

Test chart 2 according to DIN 33872-2, Hue R, Page 7/11  
 Discrimination of 5 and 16 step colour scales, ORS18a

input:  $cmy0(->c^*m^*j0^*)setcmykcolor$   
 output: no change compared to input

See for similar files: <http://www.ps.bam.de/De22/>; [www.ps.bam.de/De.HTM](http://www.ps.bam.de/De.HTM)  
 Technical information: <http://www.ps.bam.de/33872E> Version 2.1, io=1,1

BAM registration: 20080301-De22/10L/L22e06NP.PS /.PDF  
 application for output of monitor, data projector, or printer systems

BAM material: code=rh4ta

Input: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 92/360 = 0.255$

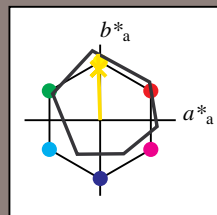
$lab^*tch$  and  $lab^*nch$

D65: hue J

LCH\*Ma: 86 88 92

olv\*Ma: 1.0 0.9 0.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$

Output: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 92/360 = 0.255$

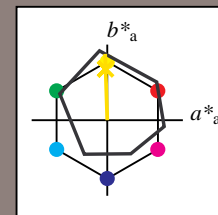
$lab^*tch$  and  $lab^*nch$

D65: hue J

LCH\*Ma: 86 88 92

olv\*Ma: 1.0 0.9 0.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

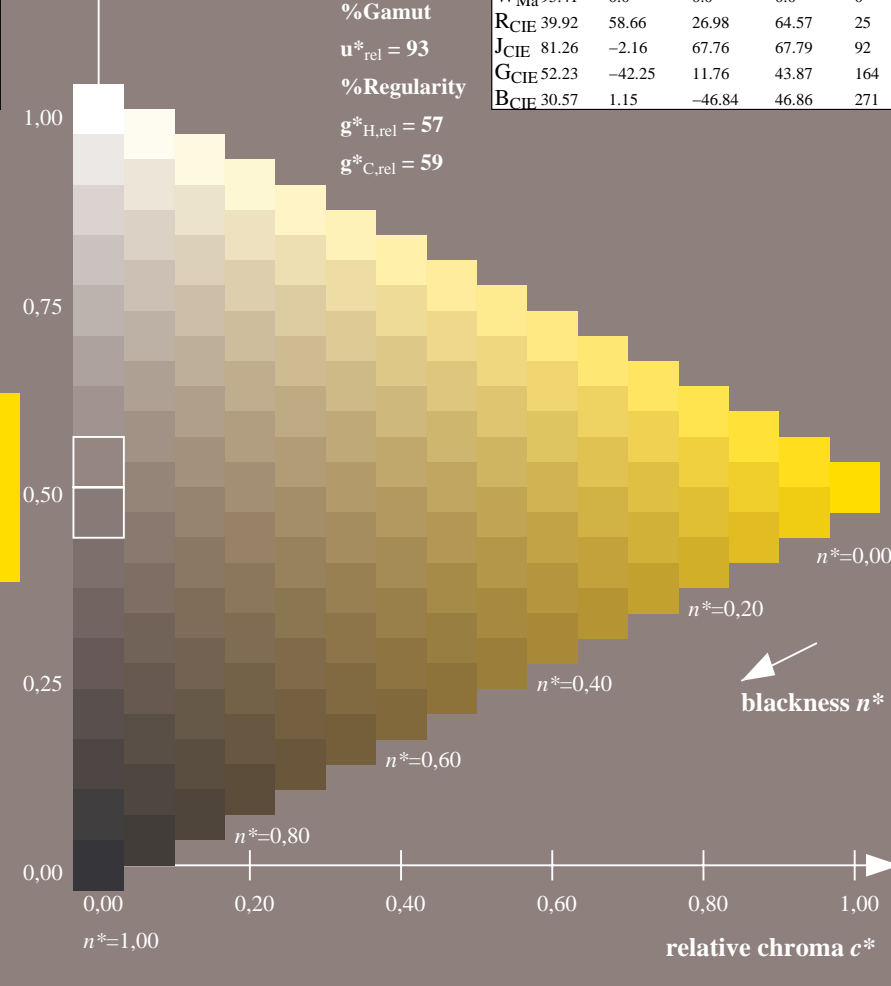
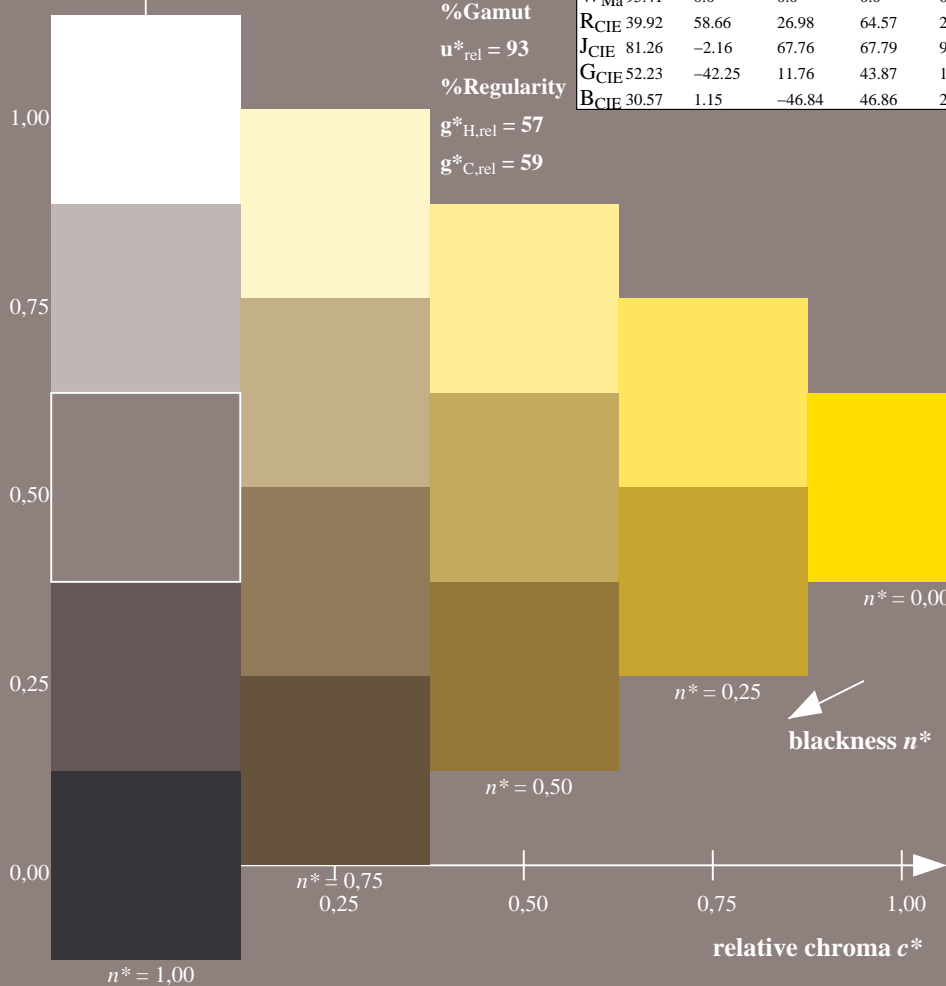
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



De220-7N, 5 step scales for constant CIELAB hue 92/360 = 0.255 (left)

16 step scales for constant CIELAB hue 92/360 = 0.255 (right)

Test chart 2 according to DIN 33872-2, Hue J, Page 8/11  
 Discrimination of 5 and 16 step colour scales, ORS18a

input:  $cmy0(->c^*m^*j0^*)setcmykcolor$   
 output: no change compared to input

See for similar files: <http://www.ps.bam.de/De22/>; [www.ps.bam.de/De22/](http://www.ps.bam.de/De22/); [www.ps.bam.de/De22/](http://www.ps.bam.de/De22/)  
 Technical information: <http://www.ps.bam.de/33872E> Version 2.1, io=1,1

BAM registration: 20080301-De22/10L/L22e07NP.PS /.PDF BAM material: code=rh4ta  
 application for output of monitor, data projector, or printer systems



Input: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 164/360 = 0.457$

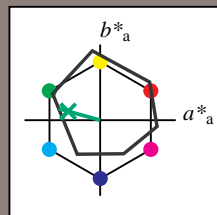
$lab^*tch$  and  $lab^*nch$

D65: hue G

LCH\*Ma: 53 57 164

olv\*Ma: 0.0 1.0 0.25

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

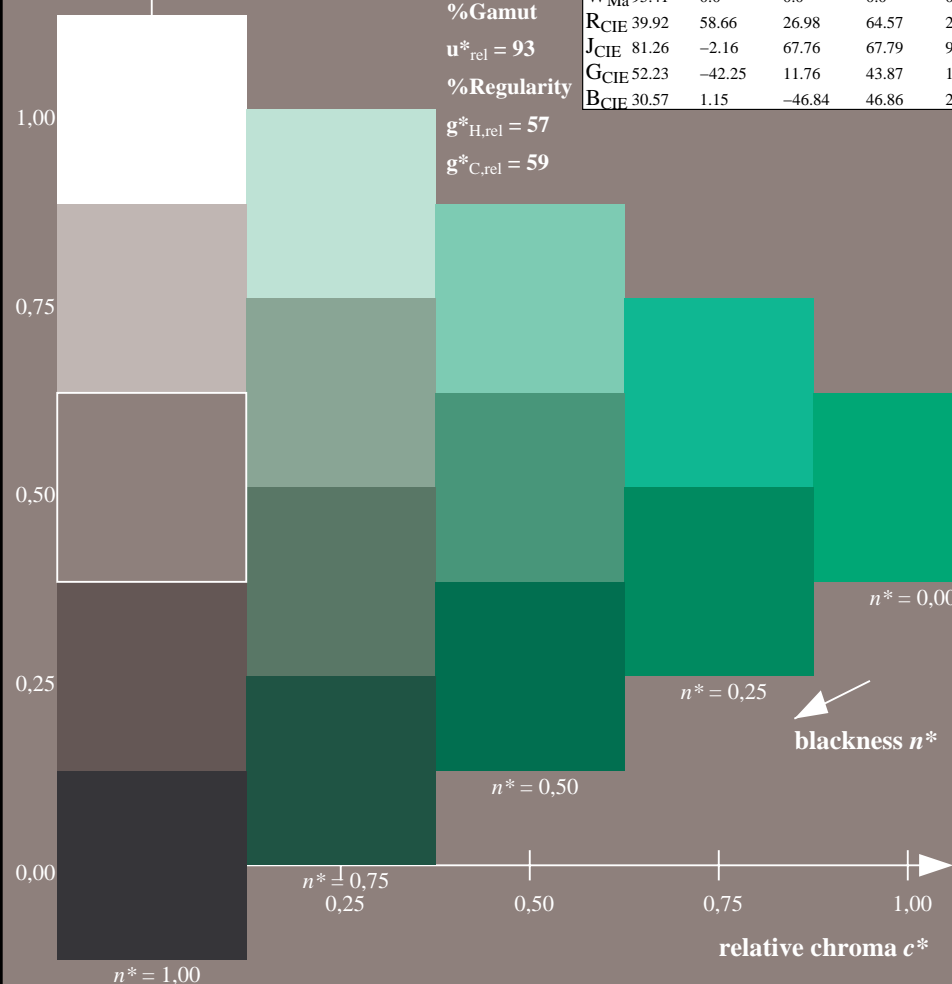
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



De220-7N, 5 step scales for constant CIELAB hue 164/360 = 0.457 (left)

Output: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 164/360 = 0.457$

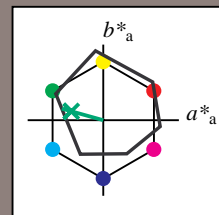
$lab^*tch$  and  $lab^*nch$

D65: hue G

LCH\*Ma: 53 57 164

olv\*Ma: 0.0 1.0 0.25

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

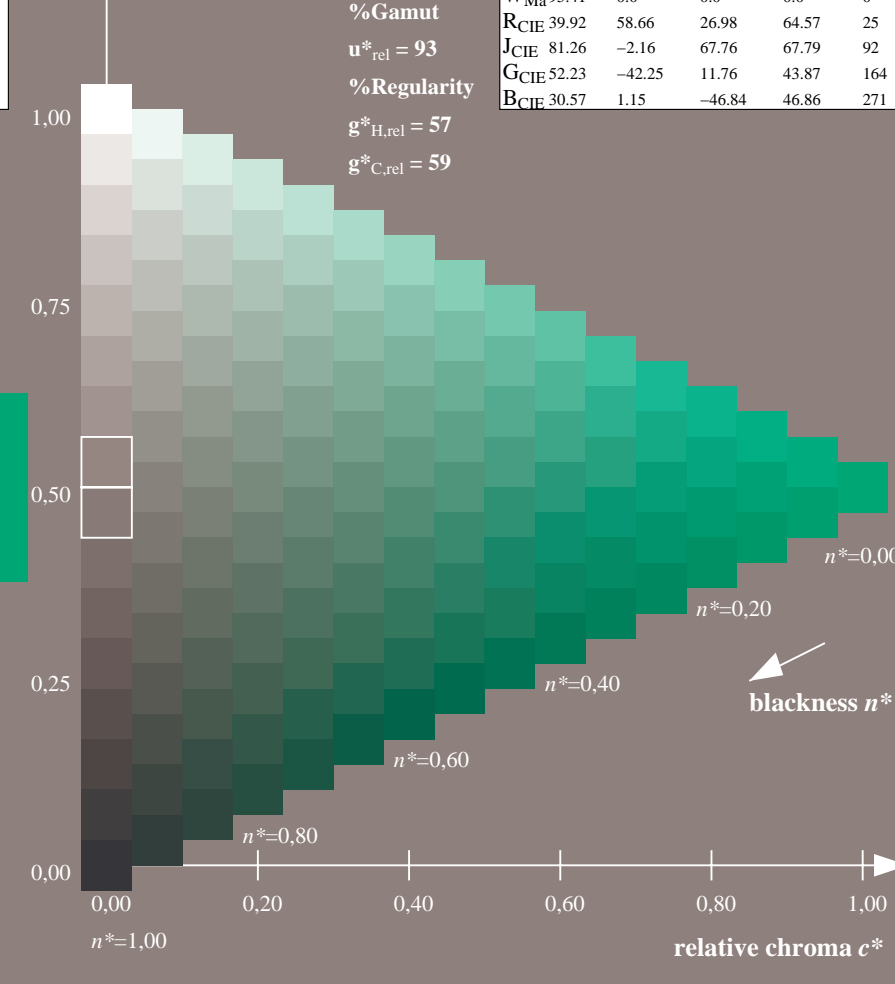
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



16 step scales for constant CIELAB hue 164/360 = 0.457 (right)

Test chart 2 according to DIN 33872-2, Hue G, Page 9/11  
 Discrimination of 5 and 16 step colour scales, ORS18a

input:  $cmy0(->c^*m^*j0^*)setcmykcolor$   
 output: no change compared to input

Input: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 271/360 = 0.754$

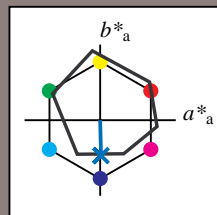
$lab^*tch$  and  $lab^*nch$

D65: hue B

LCH\*Ma: 42 45 271

olv\*Ma: 0.0 0.49 1.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

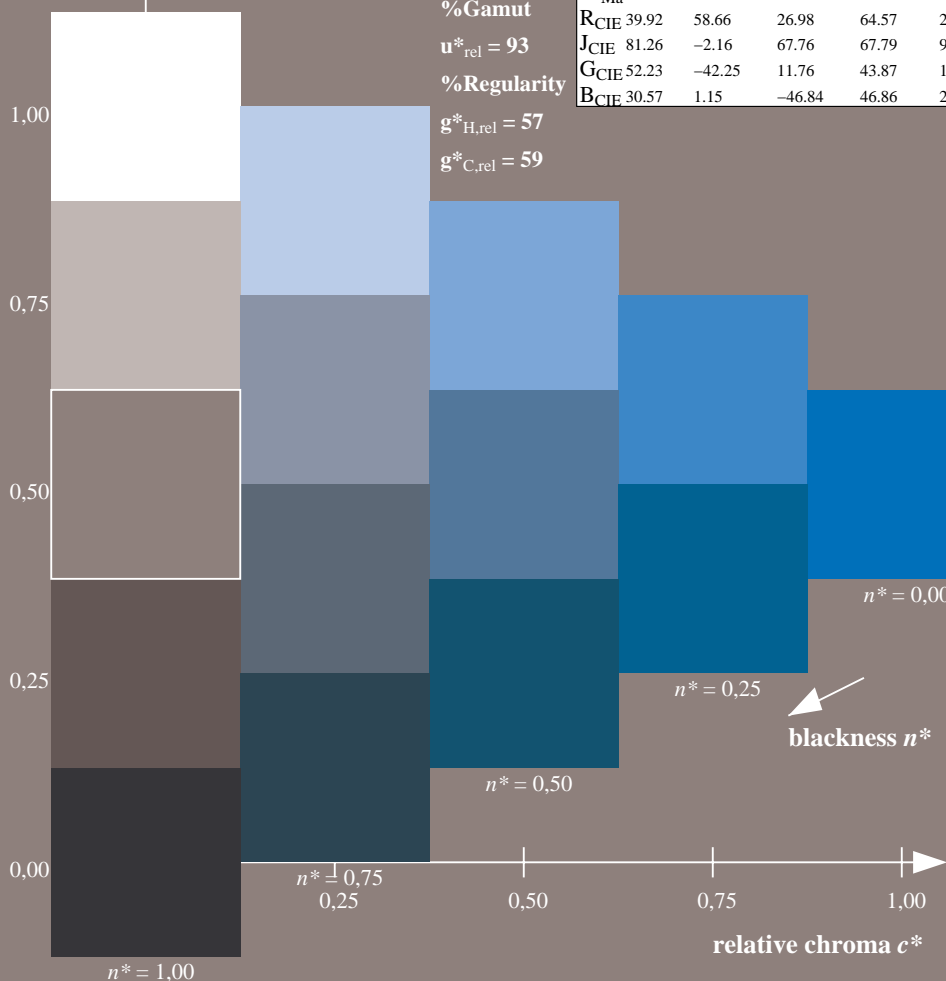
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



De220-7N, 5 step scales for constant CIELAB hue 271/360 = 0.754 (left)

Output: Colorimetric Offset Reflective System ORS18a

for hue  $h^* = lab^*h = 271/360 = 0.754$

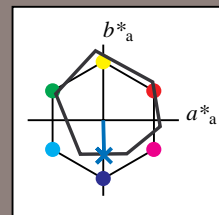
$lab^*tch$  and  $lab^*nch$

D65: hue B

LCH\*Ma: 42 45 271

olv\*Ma: 0.0 0.49 1.0

triangle lightness  $t^*$



ORS18a; adapted (a) CIELAB data

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	47.94	65.39	50.52	82.63	38
Y <sub>Ma</sub>	90.37	-10.26	91.75	92.32	96
L <sub>Ma</sub>	50.9	-62.83	34.96	71.91	151
C <sub>Ma</sub>	58.62	-30.34	-45.01	54.3	236
V <sub>Ma</sub>	25.72	31.1	-44.4	54.22	305
M <sub>Ma</sub>	48.13	75.28	-8.36	75.74	354
N <sub>Ma</sub>	18.01	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.66	26.98	64.57	25
JCIE	81.26	-2.16	67.76	67.79	92
GCIE	52.23	-42.25	11.76	43.87	164
BCIE	30.57	1.15	-46.84	46.86	271

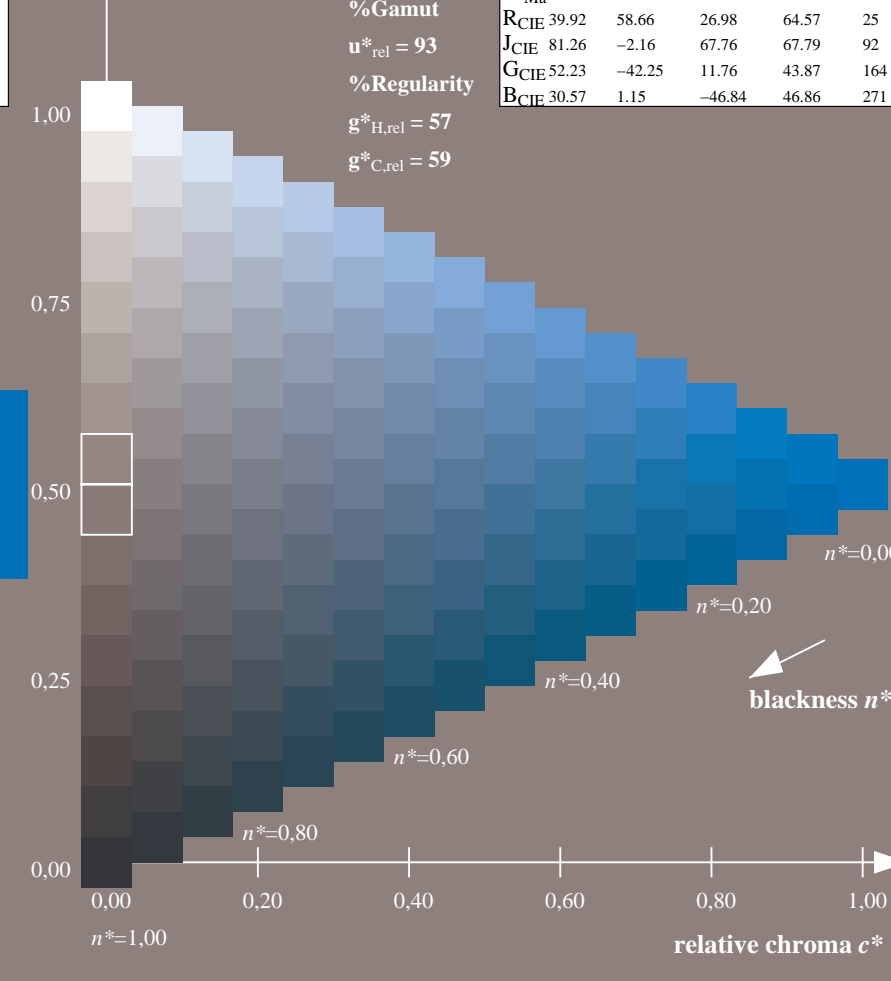
%Gamut

$u^*_{rel} = 93$

%Regularity

$g^*_{H,rel} = 57$

$g^*_{C,rel} = 59$



16 step scales for constant CIELAB hue 271/360 = 0.754 (right)

Test chart 2 according to DIN 33872-2, Hue B, Page 10/11  
 Discrimination of 5 and 16 step colour scales, ORS18a

input:  $cmy0(->c^*m^*j0^*)setcmykcolor$   
 output: no change compared to input

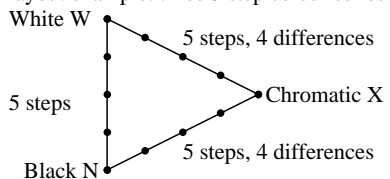
See for similar files: <http://www.ps.bam.de/De22/>; [www.ps.bam.de/De.HTM](http://www.ps.bam.de/De.HTM)  
 Technical information: <http://www.ps.bam.de/33872E> Version 2.1, io=1,1

BAM registration: 20080301-De22/10L/L22e09NP.PS /.PDF  
 application for output of monitor, data projector, or printer systems

BAM material: code=rh4ta

### Discriminability of 5 step colour series (Yes/No decision)

Layout example: three 5 step colour series



There are three basic colours on each page:  
Black N, White W and Chromatic X.  
Ten pages include 10 hue planes  
X = OYLCVM and RJGB.  
There are at maximum 12 distinguishable steps.

All steps of the three series N-W, W-X and X-N should be distinguishable on all pages  
**Are the three 5step series distinguishable on all pages? underline: Yes/No**

only in case of No: Are the three 5 step series on Page x of 10 pages distinguishable?

Underline Yes/No and give in case of No the number of distinguishable steps?

- Page 1: Yes/No, if No ../12 step differences are distinguishable of O = Orange Red
- Page 2: Yes/No, if No ../12 step differences are distinguishable of Y = Yellow
- Page 3: Yes/No, if No ../12 step differences are distinguishable of L = Leaf green
- Page 4: Yes/No, if No ../12 step differences are distinguishable of C = Cyan blue
- Page 5: Yes/No, if No ../12 step differences are distinguishable of V = Violet blue
- Page 6: Yes/No, if No ../12 step differences are distinguishable of M = Magenta Red
- Page 7: Yes/No, if No ../12 step differences are distinguishable of R = Elementary Red
- Page 8: Yes/No, if No ../12 step differences are distinguishable of J = Elementary yellow
- Page 9: Yes/No, if No ../12 step differences are distinguishable of G = Elementary Green
- Page 10: Yes/No, if No ../12 step differences are distinguishable of B = Elementary blue

Sum: ../10 Yes-Pages and ../120 step differences are distinguishable

Part 1

De220-3

### Documentation of file format, hardware and software for this test:

**PDF-File:** either [www.ps.bam.de/De22/10L/L22e00NP.PDF](http://www.ps.bam.de/De22/10L/L22e00NP.PDF) **underline Yes/No**  
or [www.ps.bam.de/De22/10P/P22e00NP.PDF](http://www.ps.bam.de/De22/10P/P22e00NP.PDF) **or underline Yes/No**

**PS-File:** either [www.ps.bam.de/De22/10L/L22e00NA.PS](http://www.ps.bam.de/De22/10L/L22e00NA.PS) **or underline Yes/No**  
or [www.ps.bam.de/De22/10P/P22e00NA.PS](http://www.ps.bam.de/De22/10P/P22e00NA.PS) **or underline Yes/No**

#### Used computer operating system:

either one of Windows/Mac/Unix/other and version:.....

**This evaluation is for the device output: underline monitor/data projector/printer**

Device model, driver and version:.....

**Device output with PDF/PS-file: underline PDF/PS-file**

#### For device output with PDF-file (L/P)22e00NP.PDF:

- either PDF-file transfer "download, copy" to PDF device:.....
- or with computer system interpretation by "Display-PDF":.....
- or with software e. g. Adobe-Reader/-Acrobat and version:.....
- or with software e. g. Ghostscript and version:.....

#### For device output with PS-file (L/P)22e00NA.PS:

- either PS-file transfer "download, copy" to PS device:.....
- or with computer system interpretation by "Display-PS":.....
- or with software e. g. Ghostscript and version:.....
- or with software e. g. Mac-Yap and version:.....

Special remarks, e. g. output of Landscape (L) file L22e00NA.PS was cutted,

Portrait (P) file P22e00NA.PS was used:.....

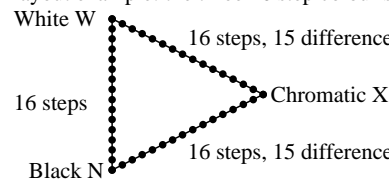
.....  
.....

Part 3

De220-5

### Discriminability of 16 step colour series (Yes/No decision)

Layout example: the three 16 step colour series



There are three basic colours on each page:  
Black N, White W and Chromatic X.  
Ten pages include 10 hue planes  
X = OYLCVM and RJGB.  
There are at maximum 45 distinguishable steps.

All steps of the three series N-W, W-X and X-N should be distinguishable on all pages  
**Are the three 16step series distinguishable on all pages? underline: Yes/No**

only in case of No: Are the three 16 step series on Page x of 10 pages distinguishable?

Underline Yes/No and give in case of No the number of distinguishable steps?

- Page 1: Yes/No, if No ../45 step differences are distinguishable of O = Orange Red
- Page 2: Yes/No, if No ../45 step differences are distinguishable of Y = Yellow
- Page 3: Yes/No, if No ../45 step differences are distinguishable of L = Leaf green
- Page 4: Yes/No, if No ../45 step differences are distinguishable of C = Cyan blue
- Page 5: Yes/No, if No ../45 step differences are distinguishable of V = Violet blue
- Page 6: Yes/No, if No ../45 step differences are distinguishable of M = Magenta Red
- Page 7: Yes/No, if No ../45 step differences are distinguishable of R = Elementary Red
- Page 8: Yes/No, if No ../45 step differences are distinguishable of J = Elementary yellow
- Page 9: Yes/No, if No ../45 step differences are distinguishable of G = Elementary Green
- Page 10: Yes/No, if No ../45 step differences are distinguishable of B = Elementary blue

Sum: ../10 Yes-Pages and ../450 step differences are distinguishable

Part 2

De221-3

### Documentation of assessor colour vision properties for visual assessment

The assessor has **normal** colour vision according to one test: **underline Yes/No**  
either according to DIN 6160:1996 with Anomaloskop of Nagel **underline Yes/unknown**  
or with test charts using colour points according to Ishihara **underline Yes/unknown**  
or tested with, please specify: ..... **underline Yes/unknown**

#### Only for display (monitor, data projector) output:

Office workplace illumination is daylight (clouded/north sky) **underline Yes/No**  
PDF-file output with [www.ps.bam.de/De13/10L/L13e00NP.PDF](http://www.ps.bam.de/De13/10L/L13e00NP.PDF) **underline Yes/No**  
Comparison of contrast range of 16 steps F to 0 with test chart no. 3 of DIN 33866-1:2000  
give contrast range: (>F:0) (F:0) (E:0) (D:0) (C:0) (A:0) (9:0) (7:0) (5:0) (3:0) (<3:0)

*Remark: In daylighted offices the contrast range is in many cases:  
on paper between: >F:0 (highly glossy), F:0 (silk glossy) and E:0 (matte)  
on display between: >F:0 and E:0 (monitor), D:0 and 3:0 (data projector)*

#### Only for optional colorimetric specification with PDF/PS file output

**PDF-File:** either [www.ps.bam.de/De21/10L/L21e00NP.PDF](http://www.ps.bam.de/De21/10L/L21e00NP.PDF) **underline Yes/No**  
or [www.ps.bam.de/De21/10P/P21e00NP.PDF](http://www.ps.bam.de/De21/10P/P21e00NP.PDF) **or underline Yes/No**

**PS-File:** either [www.ps.bam.de/De21/10L/L21e00NA.PS](http://www.ps.bam.de/De21/10L/L21e00NA.PS) **or underline Yes/No**  
or [www.ps.bam.de/De21/10P/P21e00NA.PS](http://www.ps.bam.de/De21/10P/P21e00NA.PS) **or underline Yes/No**

#### colour measurement and specification for:

CIE standard illuminant D65, 2 degree observer, CIE 45/0 geometry: **underline Yes/No**  
If No, please give other parameters: .....

#### Colorimetric specification with PS file for colours in the columns A to T

Exchange of CIELAB data in file [www.ps.bam.de/De17/10L/L17e00NP.PS](http://www.ps.bam.de/De17/10L/L17e00NP.PS) and transfer  
of the PS-file L17e00NP.PS in PDF-file L17e00NP.PDF **underline Yes/No**  
If No, please describe other method: .....

Part 4

De221-5

See for similar files: <http://www.ps.bam.de/De22/>; [www.ps.bam.de/De22/](http://www.ps.bam.de/De22/)  
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