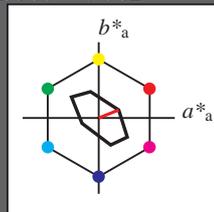


**Input: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 22/360 = 0.061$   
 $lab^*tch$  and  $lab^*nch$

D65: hue O  
 LCH\*Ma: 76 28 22  
 olv\*Ma: 1.0 0.0 0.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

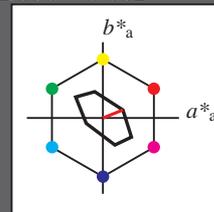
	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	76.43	26.27	10.57	28.32	22
Y <sub>Ma</sub>	93.93	-10.76	34.63	36.27	107
L <sub>Ma</sub>	89.32	-35.8	27.64	45.24	142
C <sub>Ma</sub>	90.93	-21.95	-7.07	23.07	198
V <sub>Ma</sub>	72.1	15.76	-35.63	38.97	294
M <sub>Ma</sub>	78.5	37.52	-25.23	45.22	326
N <sub>Ma</sub>	69.7	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
R <sub>CIE</sub>	39.92	58.74	27.99	65.07	25
J <sub>CIE</sub>	81.26	-2.88	71.56	71.62	92
G <sub>CIE</sub>	52.23	-42.41	13.6	44.55	162
B <sub>CIE</sub>	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**Output: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 22/360 = 0.061$   
 $lab^*tch$  and  $lab^*nch$

D65: hue O  
 LCH\*Ma: 76 28 22  
 olv\*Ma: 1.0 0.0 0.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	76.43	26.27	10.57	28.32	22
Y <sub>Ma</sub>	93.93	-10.76	34.63	36.27	107
L <sub>Ma</sub>	89.32	-35.8	27.64	45.24	142
C <sub>Ma</sub>	90.93	-21.95	-7.07	23.07	198
V <sub>Ma</sub>	72.1	15.76	-35.63	38.97	294
M <sub>Ma</sub>	78.5	37.52	-25.23	45.22	326
N <sub>Ma</sub>	69.7	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
R <sub>CIE</sub>	39.92	58.74	27.99	65.07	25
J <sub>CIE</sub>	81.26	-2.88	71.56	71.62	92
G <sub>CIE</sub>	52.23	-42.41	13.6	44.55	162
B <sub>CIE</sub>	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 1.0 \ 1.0 \ (1.0)$   
 $cmyn3^* = 0.0 \ 0.0 \ 0.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 1.0$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 95.41 \ 0.0 \ 0.0$   
 $LAB^*LABa = 95.41 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 99.99 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 1.0 \ 0.0 \ 0.0$   
 $lab^*tch = 1.0 \ 0.0 \ -$   
 $lab^*nch = 0.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 1.0 \ 0.0 \ 0.0$   
 $lab^*tce = 1.0 \ 0.0 \ -$   
 $lab^*nce = 0.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.5 \ 0.5 \ (1.0)$   
 $cmyn3^* = 0.5 \ 0.5 \ 0.5 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.5$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 82.56 \ 0.0 \ 0.0$   
 $LAB^*LABa = 82.56 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 50.0 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.5 \ 0.0 \ 0.0$   
 $lab^*tch = 0.5 \ 0.0 \ -$   
 $lab^*nch = 0.5 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.5 \ 0.0 \ 0.0$   
 $lab^*tce = 0.5 \ 0.0 \ -$   
 $lab^*nce = 0.5 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 0.0 \ 0.0 \ (1.0)$   
 $cmyn3^* = 1.0 \ 1.0 \ 1.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.0$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 1.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 69.7 \ 0.0 \ 0.0$   
 $LAB^*LABa = 69.7 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 0.01 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.0 \ 0.0 \ 0.0$   
 $lab^*tch = 0.0 \ 0.0 \ -$   
 $lab^*nch = 1.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.0 \ 0.0 \ 0.0$   
 $lab^*tce = 0.0 \ 0.0 \ -$   
 $lab^*nce = 1.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 0.5 \ 0.5 \ (1.0)$   
 $cmyn3^* = 0.0 \ 0.5 \ 0.5 \ (0.0)$   
 $olvi4^* = 1.0 \ 0.5 \ 0.5 \ 1.0$   
 $cmyn4^* = 0.0 \ 0.5 \ 0.5 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 85.92 \ 13.13 \ 5.28$   
 $LAB^*LABa = 85.92 \ 13.13 \ 5.28$   
 $LAB^*TCHa = 75.0 \ 14.16 \ 21.92$

**relative CIELAB lab\***  
 $lab^*lab = 0.631 \ 0.464 \ 0.187$   
 $lab^*tch = 0.75 \ 0.5 \ 0.061$   
 $lab^*nch = 0.0 \ 0.5 \ 0.061$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.631 \ 0.499 \ -0.024$   
 $lab^*tce = 0.75 \ 0.5 \ 0.992$   
 $lab^*nce = 0.0 \ 0.5 \ b96r$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.0 \ 0.0 \ (1.0)$   
 $cmyn3^* = 0.5 \ 1.0 \ 1.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 0.5 \ 0.5 \ 0.5$   
 $cmyn4^* = 0.0 \ 0.5 \ 0.5 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 73.07 \ 13.13 \ 5.28$   
 $LAB^*LABa = 73.07 \ 13.13 \ 5.28$   
 $LAB^*TCHa = 25.01 \ 14.16 \ 21.92$

**relative CIELAB lab\***  
 $lab^*lab = 0.131 \ 0.464 \ 0.187$   
 $lab^*tch = 0.25 \ 0.5 \ 0.061$   
 $lab^*nch = 0.5 \ 0.5 \ 0.061$

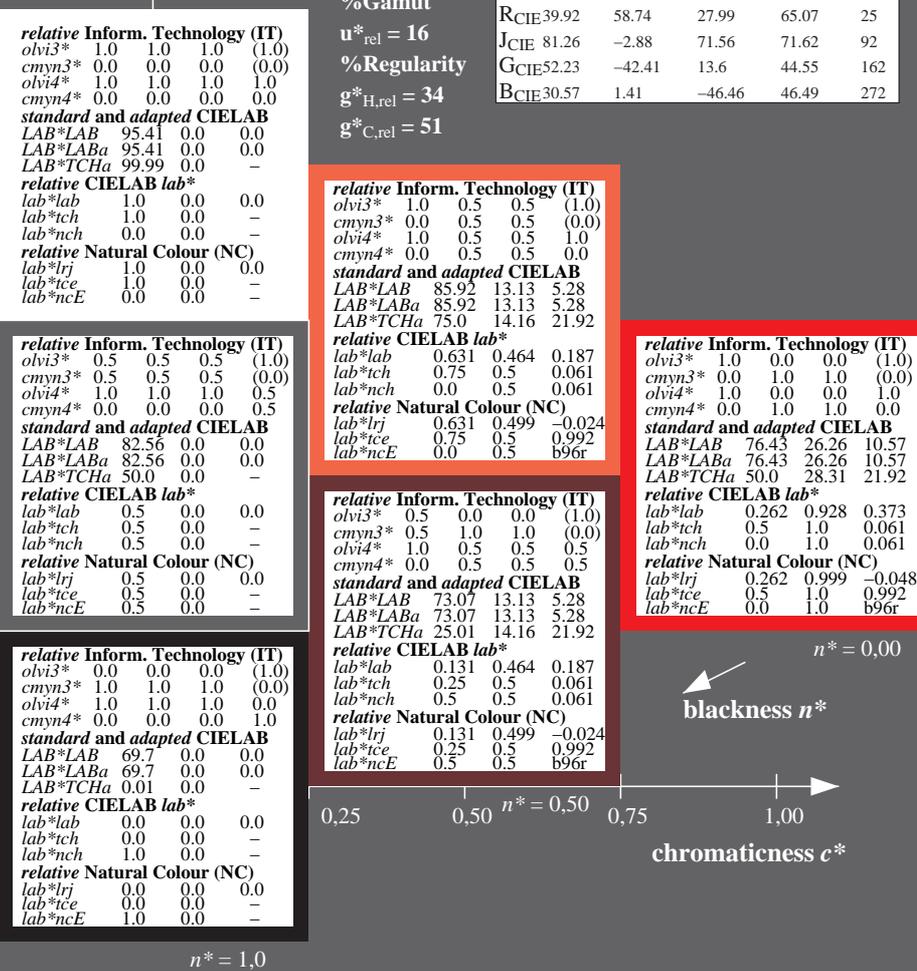
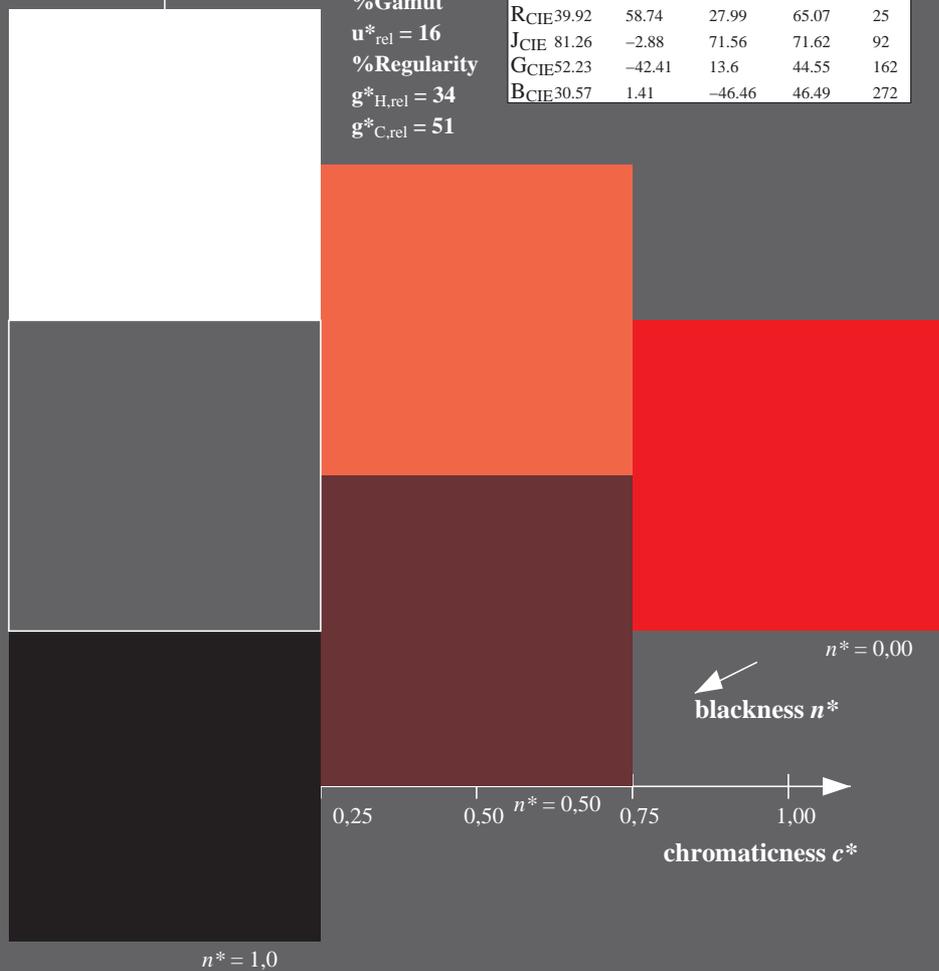
**relative Natural Colour (NC)**  
 $lab^*lrj = 0.131 \ 0.499 \ -0.024$   
 $lab^*tce = 0.25 \ 0.5 \ 0.992$   
 $lab^*nce = 0.5 \ 0.5 \ b96r$

**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 0.0 \ 0.0 \ (1.0)$   
 $cmyn3^* = 0.0 \ 1.0 \ 1.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 0.0 \ 0.0 \ 1.0$   
 $cmyn4^* = 0.0 \ 1.0 \ 1.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 76.43 \ 26.26 \ 10.57$   
 $LAB^*LABa = 76.43 \ 26.26 \ 10.57$   
 $LAB^*TCHa = 50.0 \ 28.31 \ 21.92$

**relative CIELAB lab\***  
 $lab^*lab = 0.262 \ 0.928 \ 0.373$   
 $lab^*tch = 0.5 \ 1.0 \ 0.061$   
 $lab^*nch = 0.0 \ 1.0 \ 0.061$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.262 \ 0.999 \ -0.048$   
 $lab^*tce = 0.5 \ 1.0 \ 0.992$   
 $lab^*nce = 0.0 \ 1.0 \ b96r$



OE090-7, 3 step scales for constant CIELAB hue 22/360 = 0.061 (left)

3 step scales for constant CIELAB hue 22/360 = 0.061 (right)

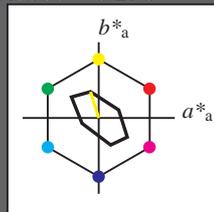
BAM-test chart OE09; Colorimetric systems TLS70 & TLS70  
 D65: 3 step colour scales and coordinate data for 10 hues

input:  $cmY0^* \ setcmykcolor$   
 output:  $cmY0^* / 000n^* \ setcmykcolor$

Input: Colorimetric Television Luminous System TLS70

for hue  $h^* = lab^*h = 107/360 = 0.298$   
 $lab^*tch$  and  $lab^*nch$

D65: hue Y  
 LCH\*Ma: 94 36 107  
 olv\*Ma: 1.0 1.0 0.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

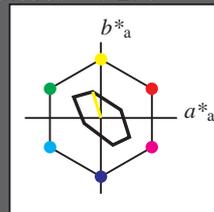
	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
OMa	76.43	26.27	10.57	28.32	22
YMa	93.93	-10.76	34.63	36.27	107
LMa	89.32	-35.8	27.64	45.24	142
CMa	90.93	-21.95	-7.07	23.07	198
VMa	72.1	15.76	-35.63	38.97	294
MMa	78.5	37.52	-25.23	45.22	326
NMa	69.7	0.0	0.0	0.0	0
WMa	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.74	27.99	65.07	25
JCIE	81.26	-2.88	71.56	71.62	92
GCIE	52.23	-42.41	13.6	44.55	162
BCIE	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

Output: Colorimetric Television Luminous System TLS70

for hue  $h^* = lab^*h = 107/360 = 0.298$   
 $lab^*tch$  and  $lab^*nch$

D65: hue Y  
 LCH\*Ma: 94 36 107  
 olv\*Ma: 1.0 1.0 0.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
OMa	76.43	26.27	10.57	28.32	22
YMa	93.93	-10.76	34.63	36.27	107
LMa	89.32	-35.8	27.64	45.24	142
CMa	90.93	-21.95	-7.07	23.07	198
VMa	72.1	15.76	-35.63	38.97	294
MMa	78.5	37.52	-25.23	45.22	326
NMa	69.7	0.0	0.0	0.0	0
WMa	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.74	27.99	65.07	25
JCIE	81.26	-2.88	71.56	71.62	92
GCIE	52.23	-42.41	13.6	44.55	162
BCIE	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**relative Inform. Technology (IT)**

olvi3*	1.0	1.0	1.0	(1.0)
cmyn3*	0.0	0.0	0.0	(0.0)
olvi4*	1.0	1.0	1.0	1.0
cmyn4*	0.0	0.0	0.0	0.0

**standard and adapted CIELAB**

LAB*LAB	95.41	0.0	0.0
LAB*LABa	95.41	0.0	0.0
LAB*TCHa	99.99	0.0	-

**relative CIELAB lab\***

lab*lab	1.0	0.0	0.0
lab*tch	1.0	0.0	-
lab*nch	0.0	0.0	-

**relative Natural Colour (NC)**

lab*lrj	1.0	0.0	0.0
lab*tce	1.0	0.0	-
lab*nce	0.0	0.0	-

**relative Inform. Technology (IT)**

olvi3*	1.0	1.0	0.5	(1.0)
cmyn3*	0.0	0.0	0.5	(0.0)
olvi4*	1.0	1.0	0.5	1.0
cmyn4*	0.0	0.0	0.5	0.0

**standard and adapted CIELAB**

LAB*LAB	94.67	-5.37	17.31
LAB*LABa	94.67	-5.37	17.31
LAB*TCHa	75.0	18.13	107.28

**relative CIELAB lab\***

lab*lab	0.971	-0.147	0.477
lab*tch	0.75	0.5	0.298
lab*nch	0.0	0.5	0.298

**relative Natural Colour (NC)**

lab*lrj	0.971	-0.164	0.472
lab*tce	0.75	0.5	0.304
lab*nce	0.0	0.5	j21g

**relative Inform. Technology (IT)**

olvi3*	0.5	0.5	0.5	(1.0)
cmyn3*	0.5	0.5	0.5	(0.0)
olvi4*	1.0	1.0	1.0	0.5
cmyn4*	0.0	0.0	0.0	0.5

**standard and adapted CIELAB**

LAB*LAB	82.56	0.0	0.0
LAB*LABa	82.56	0.0	0.0
LAB*TCHa	50.0	0.0	-

**relative CIELAB lab\***

lab*lab	0.5	0.0	0.0
lab*tch	0.5	0.0	-
lab*nch	0.5	0.0	-

**relative Natural Colour (NC)**

lab*lrj	0.5	0.0	0.0
lab*tce	0.5	0.0	-
lab*nce	0.5	0.0	-

**relative Inform. Technology (IT)**

olvi3*	0.5	0.5	0.0	(1.0)
cmyn3*	0.5	0.5	1.0	(0.0)
olvi4*	1.0	1.0	0.5	0.5
cmyn4*	0.0	0.0	0.5	0.5

**standard and adapted CIELAB**

LAB*LAB	81.82	-5.37	17.31
LAB*LABa	81.82	-5.37	17.31
LAB*TCHa	25.01	18.13	107.28

**relative CIELAB lab\***

lab*lab	0.471	-0.147	0.477
lab*tch	0.25	0.5	0.298
lab*nch	0.5	0.5	0.298

**relative Natural Colour (NC)**

lab*lrj	0.471	-0.164	0.472
lab*tce	0.25	0.5	0.304
lab*nce	0.5	0.5	j21g

**relative Inform. Technology (IT)**

olvi3*	1.0	1.0	0.0	(1.0)
cmyn3*	0.0	0.0	1.0	(0.0)
olvi4*	1.0	1.0	0.0	1.0
cmyn4*	0.0	0.0	1.0	0.0

**standard and adapted CIELAB**

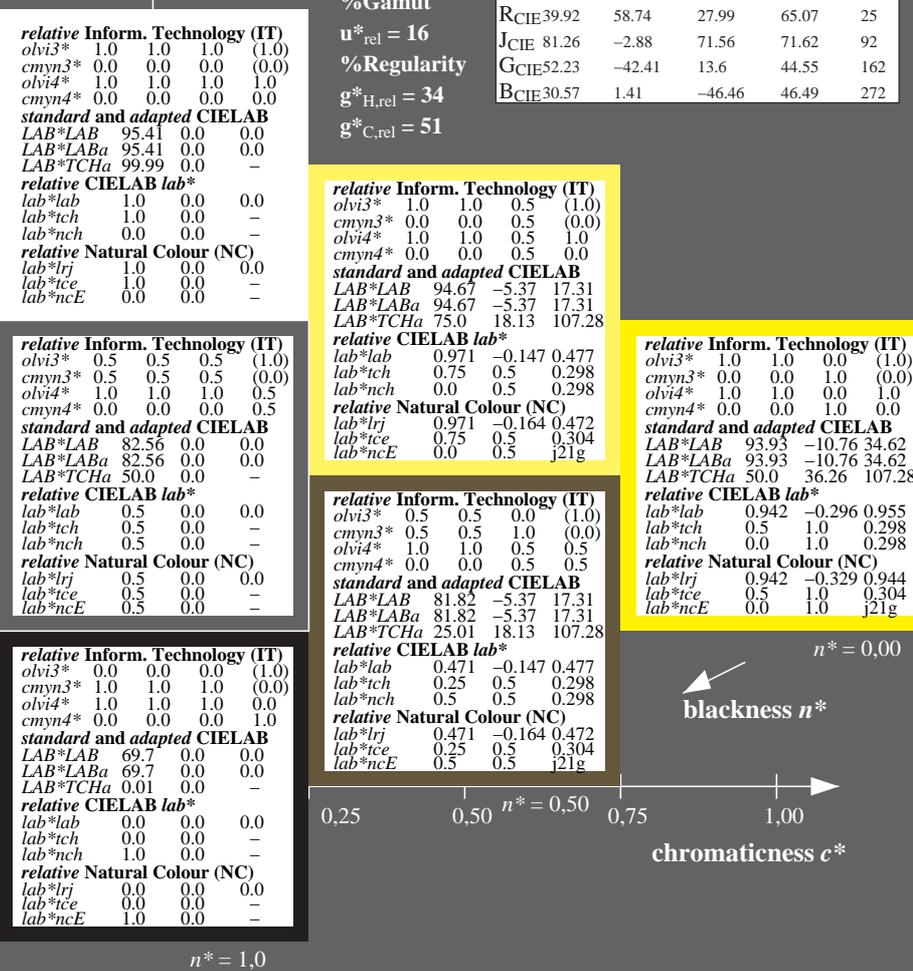
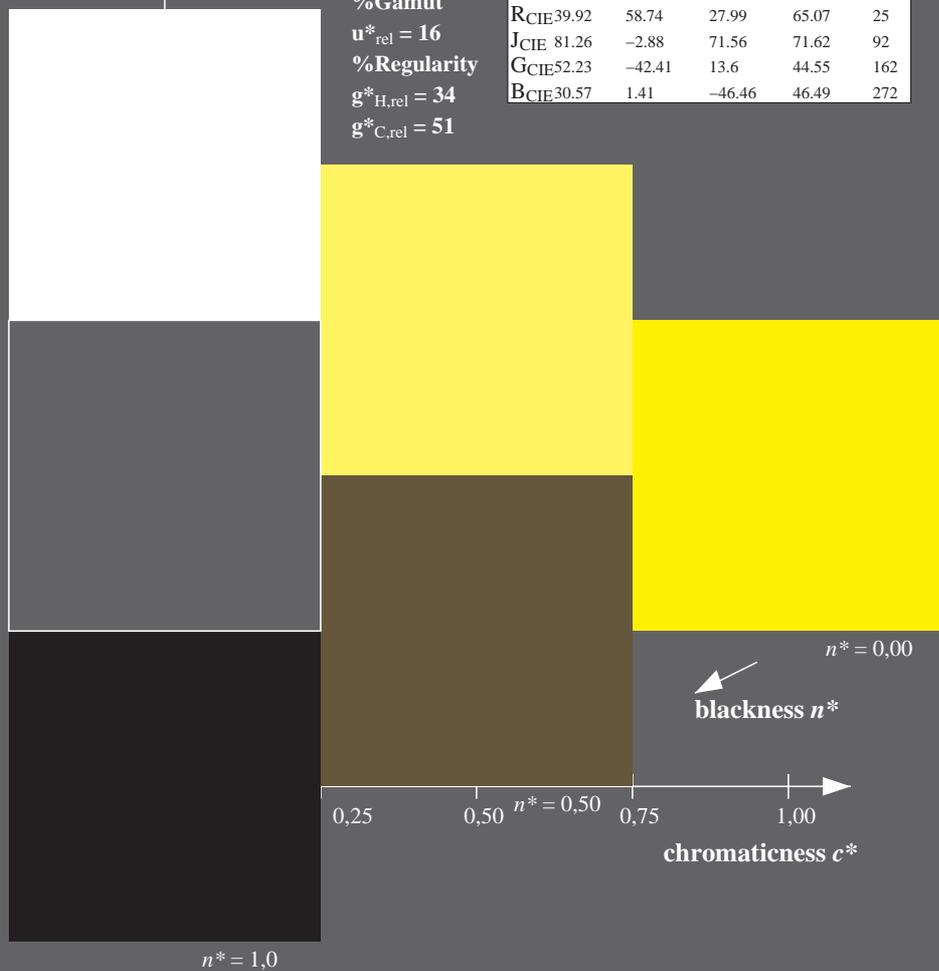
LAB*LAB	93.93	-10.76	34.62
LAB*LABa	93.93	-10.76	34.62
LAB*TCHa	50.0	36.26	107.28

**relative CIELAB lab\***

lab*lab	0.942	-0.296	0.955
lab*tch	0.5	1.0	0.298
lab*nch	0.0	1.0	0.298

**relative Natural Colour (NC)**

lab*lrj	0.942	-0.329	0.944
lab*tce	0.5	1.0	0.304
lab*nce	0.0	1.0	j21g



OE090-7, 3 step scales for constant CIE LAB hue 107/360 = 0.298 (left)

3 step scales for constant CIE LAB hue 107/360 = 0.298 (right)

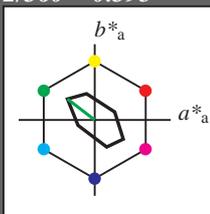
BAM-test chart OE09; Colorimetric systems TLS70 & TLS70  
 D65: 3 step colour scales and coordinate data for 10 hues

input:  $cmY0^*_{setcmykcolor}$   
 output:  $cmY0^*/000n^*_{setcmykcolor}$

**Input: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 142/360 = 0.395$   
 $lab^*tch$  and  $lab^*nch$

D65: hue L  
 LCH\*Ma: 89 45 142  
 olv\*Ma: 0.0 1.0 0.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

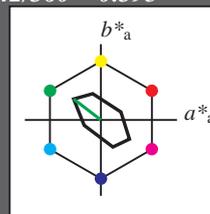
	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
OMa	76.43	26.27	10.57	28.32	22
YMa	93.93	-10.76	34.63	36.27	107
LMa	89.32	-35.8	27.64	45.24	142
CMa	90.93	-21.95	-7.07	23.07	198
VMa	72.1	15.76	-35.63	38.97	294
MMa	78.5	37.52	-25.23	45.22	326
NMa	69.7	0.0	0.0	0.0	0
WMa	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.74	27.99	65.07	25
JCIE	81.26	-2.88	71.56	71.62	92
GCIE	52.23	-42.41	13.6	44.55	162
BCIE	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**Output: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 142/360 = 0.395$   
 $lab^*tch$  and  $lab^*nch$

D65: hue L  
 LCH\*Ma: 89 45 142  
 olv\*Ma: 0.0 1.0 0.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
OMa	76.43	26.27	10.57	28.32	22
YMa	93.93	-10.76	34.63	36.27	107
LMa	89.32	-35.8	27.64	45.24	142
CMa	90.93	-21.95	-7.07	23.07	198
VMa	72.1	15.76	-35.63	38.97	294
MMa	78.5	37.52	-25.23	45.22	326
NMa	69.7	0.0	0.0	0.0	0
WMa	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.74	27.99	65.07	25
JCIE	81.26	-2.88	71.56	71.62	92
GCIE	52.23	-42.41	13.6	44.55	162
BCIE	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 1.0 \ 1.0 \ (1.0)$   
 $cmyn3^* = 0.0 \ 0.0 \ 0.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 1.0$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 95.41 \ 0.0 \ 0.0$   
 $LAB^*LABa = 95.41 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 99.99 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 1.0 \ 0.0 \ 0.0$   
 $lab^*tch = 1.0 \ 0.0 \ -$   
 $lab^*nch = 0.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 1.0 \ 0.0 \ 0.0$   
 $lab^*tce = 1.0 \ 0.0 \ -$   
 $lab^*nce = 0.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.5 \ 0.5 \ (1.0)$   
 $cmyn3^* = 0.5 \ 0.5 \ 0.5 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.5$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 82.56 \ 0.0 \ 0.0$   
 $LAB^*LABa = 82.56 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 50.0 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.5 \ 0.0 \ 0.0$   
 $lab^*tch = 0.5 \ 0.0 \ -$   
 $lab^*nch = 0.5 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.5 \ 0.0 \ 0.0$   
 $lab^*tce = 0.5 \ 0.0 \ -$   
 $lab^*nce = 0.5 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 0.0 \ 0.0 \ (1.0)$   
 $cmyn3^* = 1.0 \ 1.0 \ 1.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.0$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 1.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 69.7 \ 0.0 \ 0.0$   
 $LAB^*LABa = 69.7 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 0.01 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.0 \ 0.0 \ 0.0$   
 $lab^*tch = 0.0 \ 0.0 \ -$   
 $lab^*nch = 1.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.0 \ 0.0 \ 0.0$   
 $lab^*tce = 0.0 \ 0.0 \ -$   
 $lab^*nce = 1.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 1.0 \ 0.5 \ (1.0)$   
 $cmyn3^* = 0.5 \ 0.0 \ 0.5 \ (0.0)$   
 $olvi4^* = 0.5 \ 1.0 \ 0.5 \ 1.0$   
 $cmyn4^* = 0.5 \ 0.0 \ 0.5 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 92.36 \ -17.89 \ 13.82$   
 $LAB^*LABa = 92.36 \ -17.89 \ 13.82$   
 $LAB^*TCHa = 75.0 \ 22.61 \ 142.34$

**relative CIELAB lab\***  
 $lab^*lab = 0.881 \ -0.395 \ 0.305$   
 $lab^*tch = 0.75 \ 0.5 \ 0.395$   
 $lab^*nch = 0.0 \ 0.5 \ 0.395$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.881 \ -0.45 \ 0.216$   
 $lab^*tce = 0.75 \ 0.5 \ 0.429$   
 $lab^*nce = 0.0 \ 0.5 \ 171g$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 0.5 \ 0.0 \ (1.0)$   
 $cmyn3^* = 1.0 \ 0.5 \ 1.0 \ (0.0)$   
 $olvi4^* = 0.5 \ 1.0 \ 0.5 \ 0.5$   
 $cmyn4^* = 0.5 \ 0.0 \ 0.5 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 79.51 \ -17.89 \ 13.82$   
 $LAB^*LABa = 79.51 \ -17.89 \ 13.82$   
 $LAB^*TCHa = 25.01 \ 22.61 \ 142.34$

**relative CIELAB lab\***  
 $lab^*lab = 0.382 \ -0.395 \ 0.305$   
 $lab^*tch = 0.25 \ 0.5 \ 0.395$   
 $lab^*nch = 0.5 \ 0.5 \ 0.395$

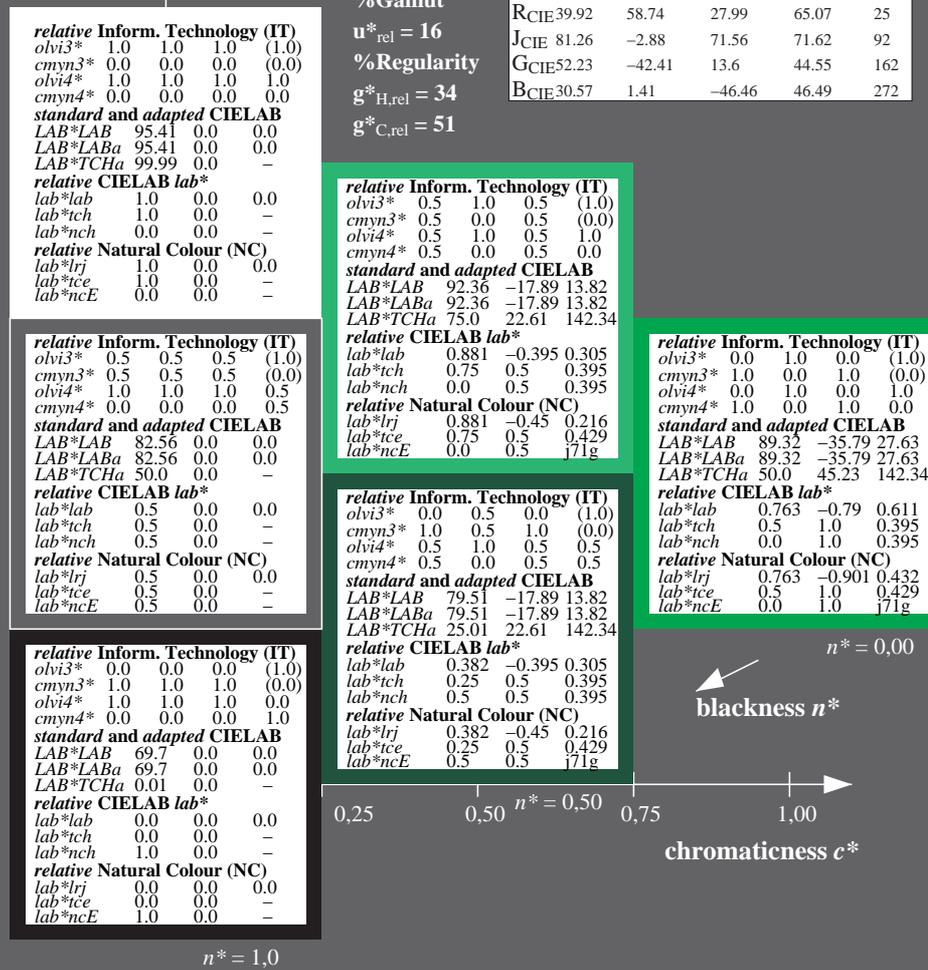
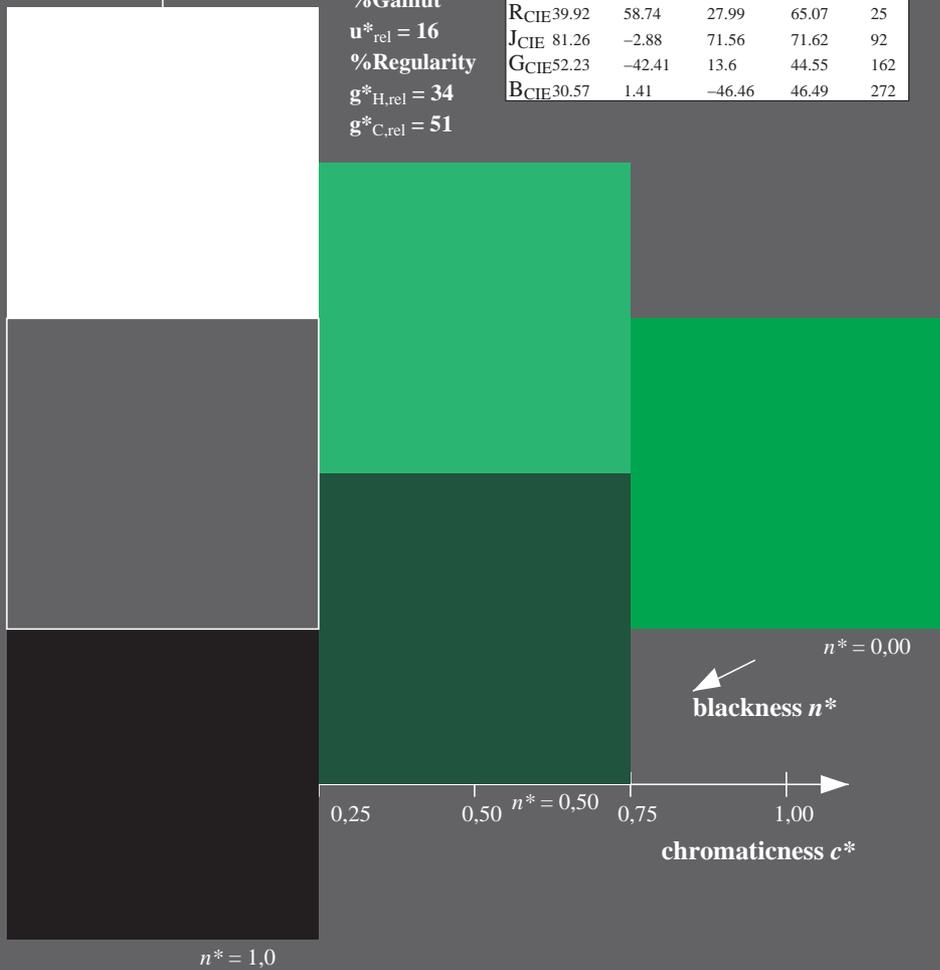
**relative Natural Colour (NC)**  
 $lab^*lrj = 0.382 \ -0.45 \ 0.216$   
 $lab^*tce = 0.25 \ 0.5 \ 0.429$   
 $lab^*nce = 0.5 \ 0.5 \ 171g$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 1.0 \ 0.0 \ (1.0)$   
 $cmyn3^* = 1.0 \ 0.0 \ 1.0 \ (0.0)$   
 $olvi4^* = 0.0 \ 1.0 \ 0.0 \ 1.0$   
 $cmyn4^* = 1.0 \ 0.0 \ 1.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 89.32 \ -35.79 \ 27.63$   
 $LAB^*LABa = 89.32 \ -35.79 \ 27.63$   
 $LAB^*TCHa = 50.0 \ 45.23 \ 142.34$

**relative CIELAB lab\***  
 $lab^*lab = 0.763 \ -0.79 \ 0.611$   
 $lab^*tch = 0.5 \ 1.0 \ 0.395$   
 $lab^*nch = 0.0 \ 1.0 \ 0.395$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.763 \ -0.901 \ 0.432$   
 $lab^*tce = 0.5 \ 1.0 \ 0.429$   
 $lab^*nce = 0.0 \ 1.0 \ 171g$



OE090-7, 3 step scales for constant CIELAB hue 142/360 = 0.395 (left)

3 step scales for constant CIELAB hue 142/360 = 0.395 (right)

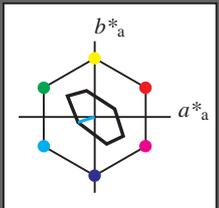
BAM-test chart OE09; Colorimetric systems TLS70 & TLS70  
 D65: 3 step colour scales and coordinate data for 10 hues

input:  $cmY0^* \ setcmykcolor$   
 output:  $cmY0^* / 000n^* \ setcmykcolor$

**Input: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 198/360 = 0.55$   
 $lab^*tch$  and  $lab^*nch$

D65: hue C  
 LCH\*Ma: 91 23 198  
 olv\*Ma: 0.0 1.0 1.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

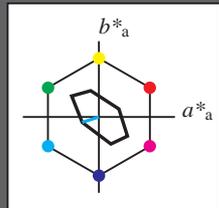
	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	76.43	26.27	10.57	28.32	22
Y <sub>Ma</sub>	93.93	-10.76	34.63	36.27	107
L <sub>Ma</sub>	89.32	-35.8	27.64	45.24	142
C <sub>Ma</sub>	90.93	-21.95	-7.07	23.07	198
V <sub>Ma</sub>	72.1	15.76	-35.63	38.97	294
M <sub>Ma</sub>	78.5	37.52	-25.23	45.22	326
N <sub>Ma</sub>	69.7	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
R <sub>CIE</sub>	39.92	58.74	27.99	65.07	25
J <sub>CIE</sub>	81.26	-2.88	71.56	71.62	92
G <sub>CIE</sub>	52.23	-42.41	13.6	44.55	162
B <sub>CIE</sub>	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**Output: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 198/360 = 0.55$   
 $lab^*tch$  and  $lab^*nch$

D65: hue C  
 LCH\*Ma: 91 23 198  
 olv\*Ma: 0.0 1.0 1.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	76.43	26.27	10.57	28.32	22
Y <sub>Ma</sub>	93.93	-10.76	34.63	36.27	107
L <sub>Ma</sub>	89.32	-35.8	27.64	45.24	142
C <sub>Ma</sub>	90.93	-21.95	-7.07	23.07	198
V <sub>Ma</sub>	72.1	15.76	-35.63	38.97	294
M <sub>Ma</sub>	78.5	37.52	-25.23	45.22	326
N <sub>Ma</sub>	69.7	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
R <sub>CIE</sub>	39.92	58.74	27.99	65.07	25
J <sub>CIE</sub>	81.26	-2.88	71.56	71.62	92
G <sub>CIE</sub>	52.23	-42.41	13.6	44.55	162
B <sub>CIE</sub>	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**relative Inform. Technology (IT)**

olvi3*	1.0	1.0	1.0	(1.0)
cmyn3*	0.0	0.0	0.0	(0.0)
olvi4*	1.0	1.0	1.0	1.0
cmyn4*	0.0	0.0	0.0	0.0

**standard and adapted CIELAB**

LAB*LAB	95.41	0.0	0.0
LAB*LABa	95.41	0.0	0.0
LAB*TCHa	99.99	0.0	-

**relative CIELAB lab\***

lab*lab	1.0	0.0	0.0
lab*tch	1.0	0.0	-
lab*nch	0.0	0.0	-

**relative Natural Colour (NC)**

lab*lrj	1.0	0.0	0.0
lab*tce	1.0	0.0	-
lab*nce	0.0	0.0	-

**relative Inform. Technology (IT)**

olvi3*	0.5	1.0	1.0	(1.0)
cmyn3*	0.5	0.0	0.0	(0.0)
olvi4*	0.5	1.0	1.0	1.0
cmyn4*	0.5	0.0	0.0	0.0

**standard and adapted CIELAB**

LAB*LAB	93.17	-10.97	-3.53
LAB*LABa	93.17	-10.97	-3.53
LAB*TCHa	75.0	11.53	197.87

**relative CIELAB lab\***

lab*lab	0.913	-0.475	-0.152
lab*tch	0.75	0.5	0.55
lab*nch	0.0	0.5	0.55

**relative Natural Colour (NC)**

lab*lrj	0.913	-0.435	-0.244
lab*tce	0.75	0.5	0.581
lab*nce	0.0	0.5	g32b

**relative Inform. Technology (IT)**

olvi3*	0.5	0.5	0.5	(1.0)
cmyn3*	0.5	0.5	0.5	(0.0)
olvi4*	1.0	1.0	1.0	0.5
cmyn4*	0.0	0.0	0.0	0.5

**standard and adapted CIELAB**

LAB*LAB	82.56	0.0	0.0
LAB*LABa	82.56	0.0	0.0
LAB*TCHa	50.0	0.0	-

**relative CIELAB lab\***

lab*lab	0.5	0.0	0.0
lab*tch	0.5	0.0	-
lab*nch	0.5	0.0	-

**relative Natural Colour (NC)**

lab*lrj	0.5	0.0	0.0
lab*tce	0.5	0.0	-
lab*nce	0.5	0.0	-

**relative Inform. Technology (IT)**

olvi3*	0.0	0.5	0.5	(1.0)
cmyn3*	1.0	0.5	0.5	(0.0)
olvi4*	0.5	1.0	1.0	0.5
cmyn4*	0.5	0.0	0.0	0.5

**standard and adapted CIELAB**

LAB*LAB	80.32	-10.97	-3.53
LAB*LABa	80.32	-10.97	-3.53
LAB*TCHa	25.01	11.53	197.87

**relative CIELAB lab\***

lab*lab	0.413	-0.475	-0.152
lab*tch	0.25	0.5	0.55
lab*nch	0.5	0.5	0.55

**relative Natural Colour (NC)**

lab*lrj	0.413	-0.435	-0.244
lab*tce	0.25	0.5	0.581
lab*nce	0.5	0.5	g32b

**relative Inform. Technology (IT)**

olvi3*	0.0	1.0	1.0	(1.0)
cmyn3*	1.0	0.0	0.0	(0.0)
olvi4*	0.0	1.0	1.0	1.0
cmyn4*	1.0	0.0	0.0	0.0

**standard and adapted CIELAB**

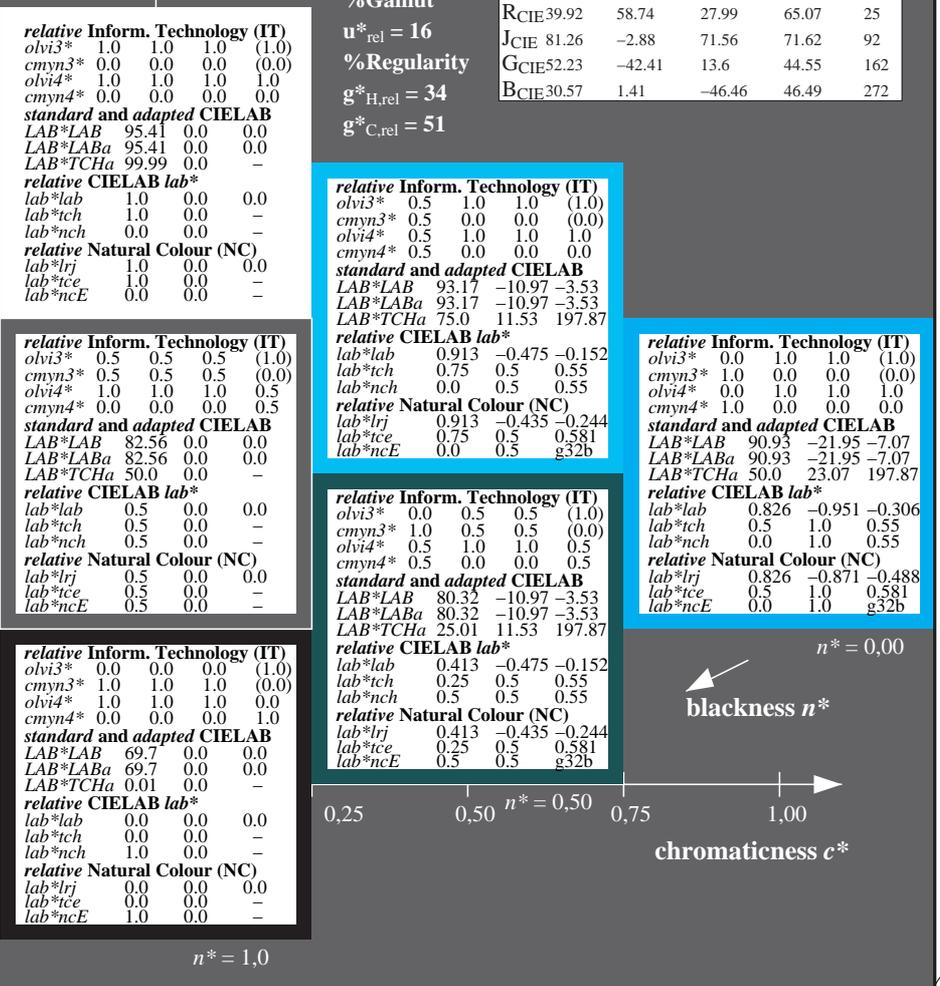
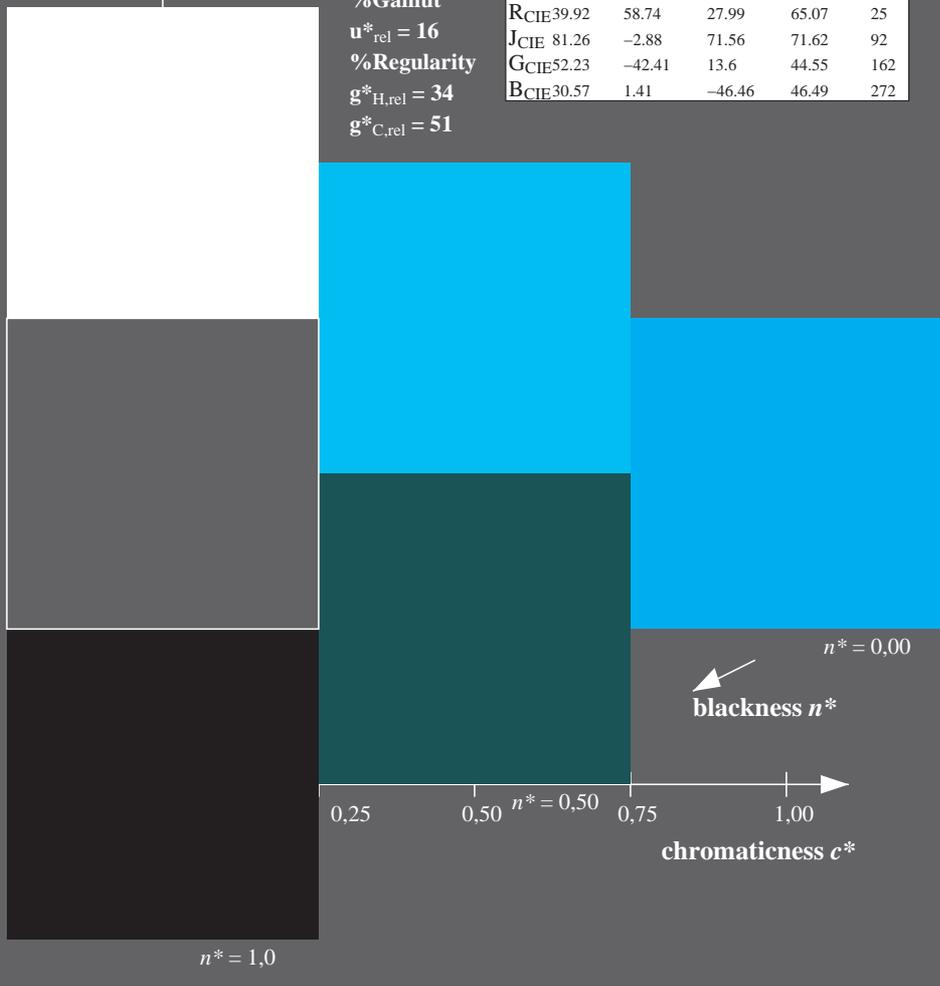
LAB*LAB	90.93	-21.95	-7.07
LAB*LABa	90.93	-21.95	-7.07
LAB*TCHa	50.0	23.07	197.87

**relative CIELAB lab\***

lab*lab	0.826	-0.951	-0.306
lab*tch	0.5	1.0	0.55
lab*nch	0.0	1.0	0.55

**relative Natural Colour (NC)**

lab*lrj	0.826	-0.871	-0.488
lab*tce	0.5	1.0	0.581
lab*nce	0.0	1.0	g32b



BAM-test chart OE09; Colorimetric systems TLS70 & TLS70  
 D65: 3 step colour scales and coordinate data for 10 hues

input:  $cmY0^*_{setcmykcolor}$   
 output:  $cmY0^*/000n^*_{setcmykcolor}$

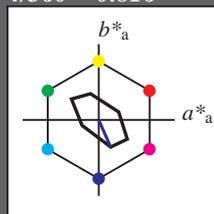
See for similar files: <http://www.ps.bam.de/OE09/>  
 Technical information: <http://www.ps.bam.de>  
 Version 2.1, io=0.0, CIELAB

BAM registration: 20060101-OE09/10S/S09E03FP.PS/.PDF BAM material: code=rh4ta  
 application for evaluation and measurement of printer or monitor systems  
 /OE09/ Form: 4/10, Serie: 1/1, Page: 4 Page count: 4

**Input: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 294/360 = 0.816$   
 $lab^*tch$  and  $lab^*nch$

D65: hue V  
 LCH\*Ma: 72 39 294  
 olv\*Ma: 0.0 0.0 1.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

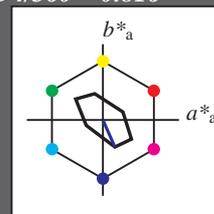
	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
OMa	76.43	26.27	10.57	28.32	22
YMa	93.93	-10.76	34.63	36.27	107
LMa	89.32	-35.8	27.64	45.24	142
CMa	90.93	-21.95	-7.07	23.07	198
VMa	72.1	15.76	-35.63	38.97	294
MMa	78.5	37.52	-25.23	45.22	326
NMa	69.7	0.0	0.0	0.0	0
WMa	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.74	27.99	65.07	25
JCIE	81.26	-2.88	71.56	71.62	92
GCIE	52.23	-42.41	13.6	44.55	162
BCIE	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**Output: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 294/360 = 0.816$   
 $lab^*tch$  and  $lab^*nch$

D65: hue V  
 LCH\*Ma: 72 39 294  
 olv\*Ma: 0.0 0.0 1.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
OMa	76.43	26.27	10.57	28.32	22
YMa	93.93	-10.76	34.63	36.27	107
LMa	89.32	-35.8	27.64	45.24	142
CMa	90.93	-21.95	-7.07	23.07	198
VMa	72.1	15.76	-35.63	38.97	294
MMa	78.5	37.52	-25.23	45.22	326
NMa	69.7	0.0	0.0	0.0	0
WMa	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.74	27.99	65.07	25
JCIE	81.26	-2.88	71.56	71.62	92
GCIE	52.23	-42.41	13.6	44.55	162
BCIE	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 1.0 \ 1.0 \ (1.0)$   
 $cmyn3^* = 0.0 \ 0.0 \ 0.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 1.0$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 95.41 \ 0.0 \ 0.0$   
 $LAB^*LABa = 95.41 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 99.99 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 1.0 \ 0.0 \ 0.0$   
 $lab^*tch = 1.0 \ 0.0 \ -$   
 $lab^*nch = 0.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 1.0 \ 0.0 \ 0.0$   
 $lab^*tce = 1.0 \ 0.0 \ -$   
 $lab^*nce = 0.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.5 \ 0.5 \ (1.0)$   
 $cmyn3^* = 0.5 \ 0.5 \ 0.5 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.5$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 82.56 \ 0.0 \ 0.0$   
 $LAB^*LABa = 82.56 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 50.0 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.5 \ 0.0 \ 0.0$   
 $lab^*tch = 0.5 \ 0.0 \ -$   
 $lab^*nch = 0.5 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.5 \ 0.0 \ 0.0$   
 $lab^*tce = 0.5 \ 0.0 \ -$   
 $lab^*nce = 0.5 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 0.0 \ 0.0 \ (1.0)$   
 $cmyn3^* = 1.0 \ 1.0 \ 1.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.0$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 1.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 69.7 \ 0.0 \ 0.0$   
 $LAB^*LABa = 69.7 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 0.01 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.0 \ 0.0 \ 0.0$   
 $lab^*tch = 0.0 \ 0.0 \ -$   
 $lab^*nch = 1.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.0 \ 0.0 \ 0.0$   
 $lab^*tce = 0.0 \ 0.0 \ -$   
 $lab^*nce = 1.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.5 \ 1.0 \ (1.0)$   
 $cmyn3^* = 0.5 \ 0.5 \ 0.0 \ (0.0)$   
 $olvi4^* = 0.5 \ 0.5 \ 1.0 \ 1.0$   
 $cmyn4^* = 0.5 \ 0.5 \ 0.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 83.75 \ 7.88 \ -17.81$   
 $LAB^*LABa = 83.75 \ 7.88 \ -17.81$   
 $LAB^*TCHa = 75.0 \ 19.48 \ 293.86$

**relative CIELAB lab\***  
 $lab^*lab = 0.547 \ 0.202 \ -0.456$   
 $lab^*tch = 0.75 \ 0.5 \ 0.816$   
 $lab^*nch = 0.0 \ 0.5 \ 0.816$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.547 \ 0.15 \ -0.476$   
 $lab^*tce = 0.75 \ 0.5 \ 0.799$   
 $lab^*nce = 0.0 \ 0.5 \ b19r$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 0.0 \ 0.5 \ (1.0)$   
 $cmyn3^* = 1.0 \ 1.0 \ 0.5 \ (0.0)$   
 $olvi4^* = 0.5 \ 0.5 \ 1.0 \ 0.5$   
 $cmyn4^* = 0.5 \ 0.5 \ 0.0 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 70.9 \ 7.88 \ -17.81$   
 $LAB^*LABa = 70.9 \ 7.88 \ -17.81$   
 $LAB^*TCHa = 25.01 \ 19.48 \ 293.86$

**relative CIELAB lab\***  
 $lab^*lab = 0.047 \ 0.202 \ -0.456$   
 $lab^*tch = 0.25 \ 0.5 \ 0.816$   
 $lab^*nch = 0.5 \ 0.5 \ 0.816$

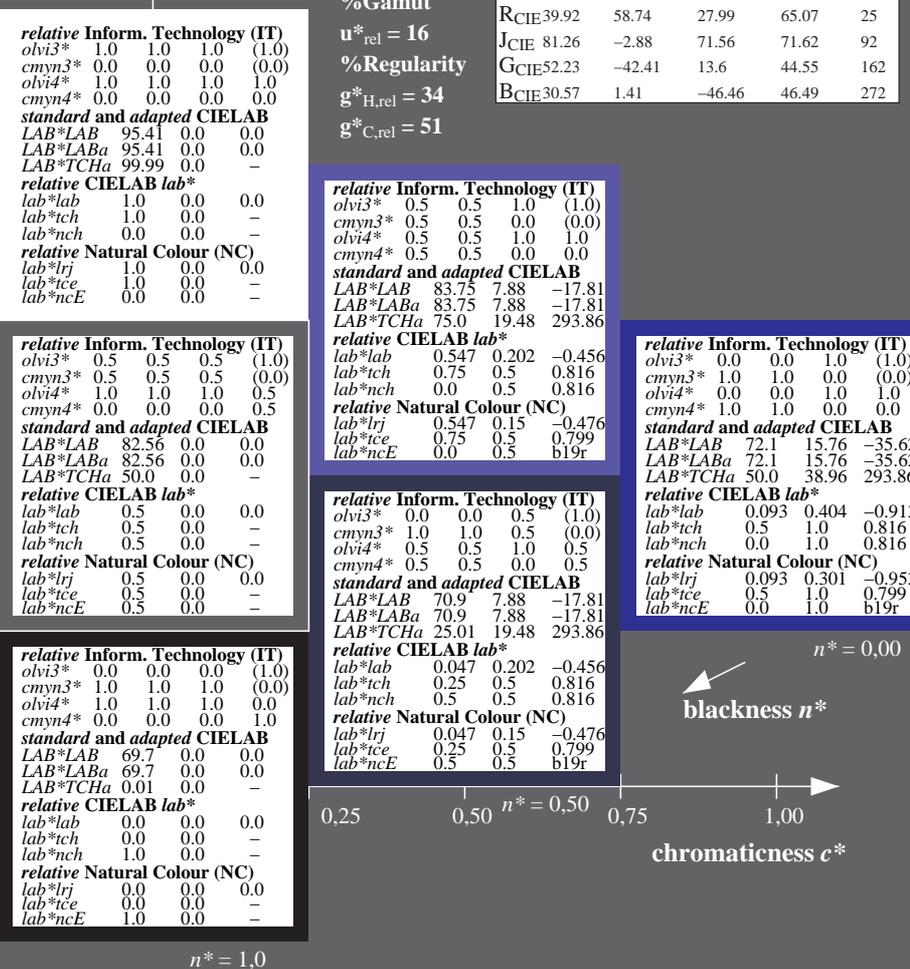
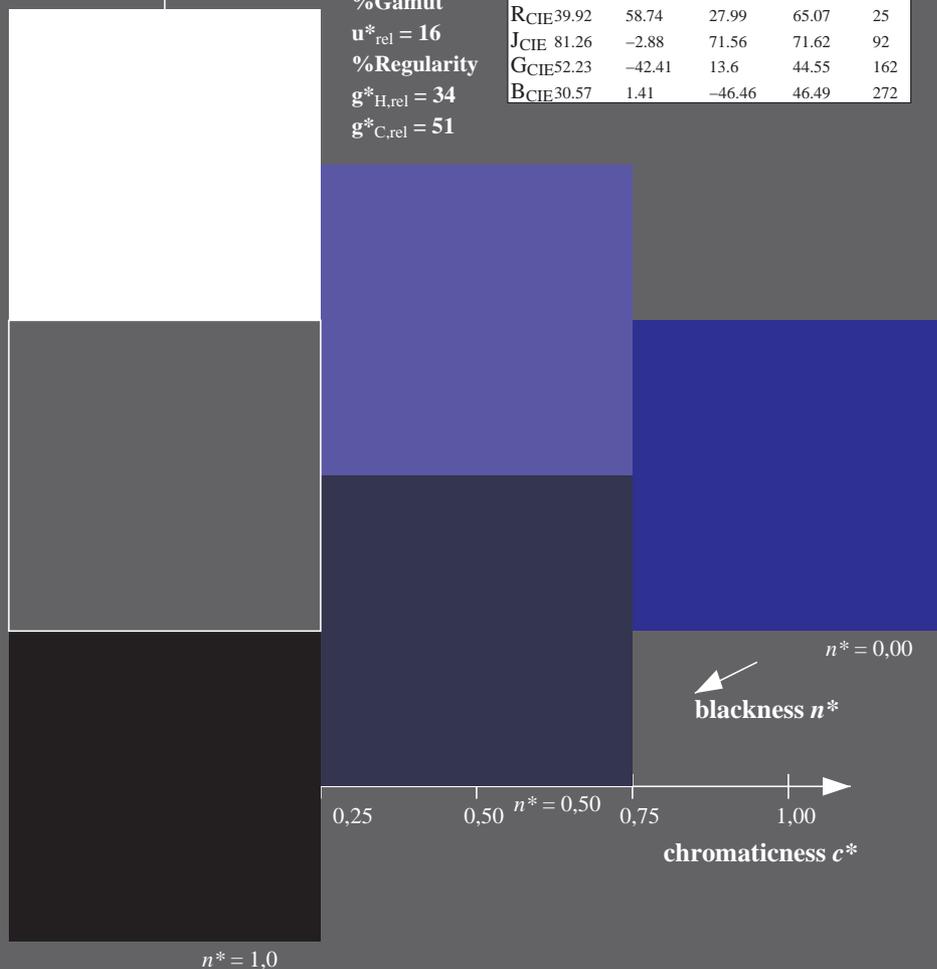
**relative Natural Colour (NC)**  
 $lab^*lrj = 0.047 \ 0.15 \ -0.476$   
 $lab^*tce = 0.25 \ 0.5 \ 0.799$   
 $lab^*nce = 0.5 \ 0.5 \ b19r$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 0.0 \ 1.0 \ (1.0)$   
 $cmyn3^* = 1.0 \ 1.0 \ 0.0 \ (0.0)$   
 $olvi4^* = 0.0 \ 0.0 \ 1.0 \ 1.0$   
 $cmyn4^* = 1.0 \ 1.0 \ 0.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 72.1 \ 15.76 \ -35.62$   
 $LAB^*LABa = 72.1 \ 15.76 \ -35.62$   
 $LAB^*TCHa = 50.0 \ 38.96 \ 293.86$

**relative CIELAB lab\***  
 $lab^*lab = 0.093 \ 0.404 \ -0.913$   
 $lab^*tch = 0.5 \ 1.0 \ 0.816$   
 $lab^*nch = 0.0 \ 1.0 \ 0.816$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.093 \ 0.301 \ -0.953$   
 $lab^*tce = 0.5 \ 1.0 \ 0.799$   
 $lab^*nce = 0.0 \ 1.0 \ b19r$



OE090-7, 3 step scales for constant CIELAB hue 294/360 = 0.816 (left)

3 step scales for constant CIELAB hue 294/360 = 0.816 (right)

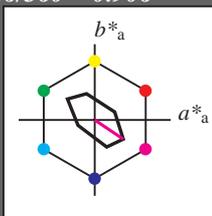
BAM-test chart OE09; Colorimetric systems TLS70 & TLS70  
 D65: 3 step colour scales and coordinate data for 10 hues

input:  $cmY0^* \ setcmykcolor$   
 output:  $cmY0^* / 000n^* \ setcmykcolor$

**Input: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 326/360 = 0.906$   
 $lab^*tch$  and  $lab^*nch$

D65: hue M  
 LCH\*Ma: 79 45 326  
 olv\*Ma: 1.0 0.0 1.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

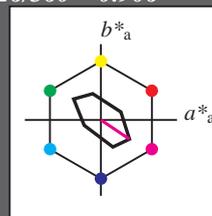
	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	76.43	26.27	10.57	28.32	22
Y <sub>Ma</sub>	93.93	-10.76	34.63	36.27	107
L <sub>Ma</sub>	89.32	-35.8	27.64	45.24	142
C <sub>Ma</sub>	90.93	-21.95	-7.07	23.07	198
V <sub>Ma</sub>	72.1	15.76	-35.63	38.97	294
M <sub>Ma</sub>	78.5	37.52	-25.23	45.22	326
N <sub>Ma</sub>	69.7	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
R <sub>CIE</sub>	39.92	58.74	27.99	65.07	25
J <sub>CIE</sub>	81.26	-2.88	71.56	71.62	92
G <sub>CIE</sub>	52.23	-42.41	13.6	44.55	162
B <sub>CIE</sub>	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**Output: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 326/360 = 0.906$   
 $lab^*tch$  and  $lab^*nch$

D65: hue M  
 LCH\*Ma: 79 45 326  
 olv\*Ma: 1.0 0.0 1.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	76.43	26.27	10.57	28.32	22
Y <sub>Ma</sub>	93.93	-10.76	34.63	36.27	107
L <sub>Ma</sub>	89.32	-35.8	27.64	45.24	142
C <sub>Ma</sub>	90.93	-21.95	-7.07	23.07	198
V <sub>Ma</sub>	72.1	15.76	-35.63	38.97	294
M <sub>Ma</sub>	78.5	37.52	-25.23	45.22	326
N <sub>Ma</sub>	69.7	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
R <sub>CIE</sub>	39.92	58.74	27.99	65.07	25
J <sub>CIE</sub>	81.26	-2.88	71.56	71.62	92
G <sub>CIE</sub>	52.23	-42.41	13.6	44.55	162
B <sub>CIE</sub>	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 1.0 \ 1.0 \ (1.0)$   
 $cmyn3^* = 0.0 \ 0.0 \ 0.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 1.0$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 95.41 \ 0.0 \ 0.0$   
 $LAB^*LABa = 95.41 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 99.99 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 1.0 \ 0.0 \ 0.0$   
 $lab^*tch = 1.0 \ 0.0 \ -$   
 $lab^*nch = 0.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 1.0 \ 0.0 \ 0.0$   
 $lab^*tce = 1.0 \ 0.0 \ -$   
 $lab^*nce = 0.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.5 \ 0.5 \ (1.0)$   
 $cmyn3^* = 0.5 \ 0.5 \ 0.5 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.5$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 82.56 \ 0.0 \ 0.0$   
 $LAB^*LABa = 82.56 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 50.0 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.5 \ 0.0 \ 0.0$   
 $lab^*tch = 0.5 \ 0.0 \ -$   
 $lab^*nch = 0.5 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.5 \ 0.0 \ 0.0$   
 $lab^*tce = 0.5 \ 0.0 \ -$   
 $lab^*nce = 0.5 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 0.0 \ 0.0 \ (1.0)$   
 $cmyn3^* = 1.0 \ 1.0 \ 1.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.0$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 1.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 69.7 \ 0.0 \ 0.0$   
 $LAB^*LABa = 69.7 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 0.01 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.0 \ 0.0 \ 0.0$   
 $lab^*tch = 0.0 \ 0.0 \ -$   
 $lab^*nch = 1.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.0 \ 0.0 \ 0.0$   
 $lab^*tce = 0.0 \ 0.0 \ -$   
 $lab^*nce = 1.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 0.5 \ 1.0 \ (1.0)$   
 $cmyn3^* = 0.0 \ 0.5 \ 0.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 0.5 \ 1.0 \ 1.0$   
 $cmyn4^* = 0.0 \ 0.5 \ 0.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 86.95 \ 18.76 \ -12.61$   
 $LAB^*LABa = 86.95 \ 18.76 \ -12.61$   
 $LAB^*TCHa = 75.0 \ 22.61 \ 326.07$

**relative CIELAB lab\***  
 $lab^*lab = 0.671 \ 0.415 \ -0.278$   
 $lab^*tch = 0.75 \ 0.5 \ 0.906$   
 $lab^*nch = 0.0 \ 0.5 \ 0.906$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.671 \ 0.341 \ -0.365$   
 $lab^*tce = 0.75 \ 0.5 \ 0.869$   
 $lab^*nce = 0.0 \ 0.5 \ b47r$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.0 \ 0.5 \ (1.0)$   
 $cmyn3^* = 0.5 \ 1.0 \ 0.5 \ (0.0)$   
 $olvi4^* = 1.0 \ 0.5 \ 1.0 \ 0.5$   
 $cmyn4^* = 0.0 \ 0.5 \ 0.0 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 74.1 \ 18.76 \ -12.61$   
 $LAB^*LABa = 74.1 \ 18.76 \ -12.61$   
 $LAB^*TCHa = 25.01 \ 22.61 \ 326.07$

**relative CIELAB lab\***  
 $lab^*lab = 0.171 \ 0.415 \ -0.278$   
 $lab^*tch = 0.25 \ 0.5 \ 0.906$   
 $lab^*nch = 0.5 \ 0.5 \ 0.906$

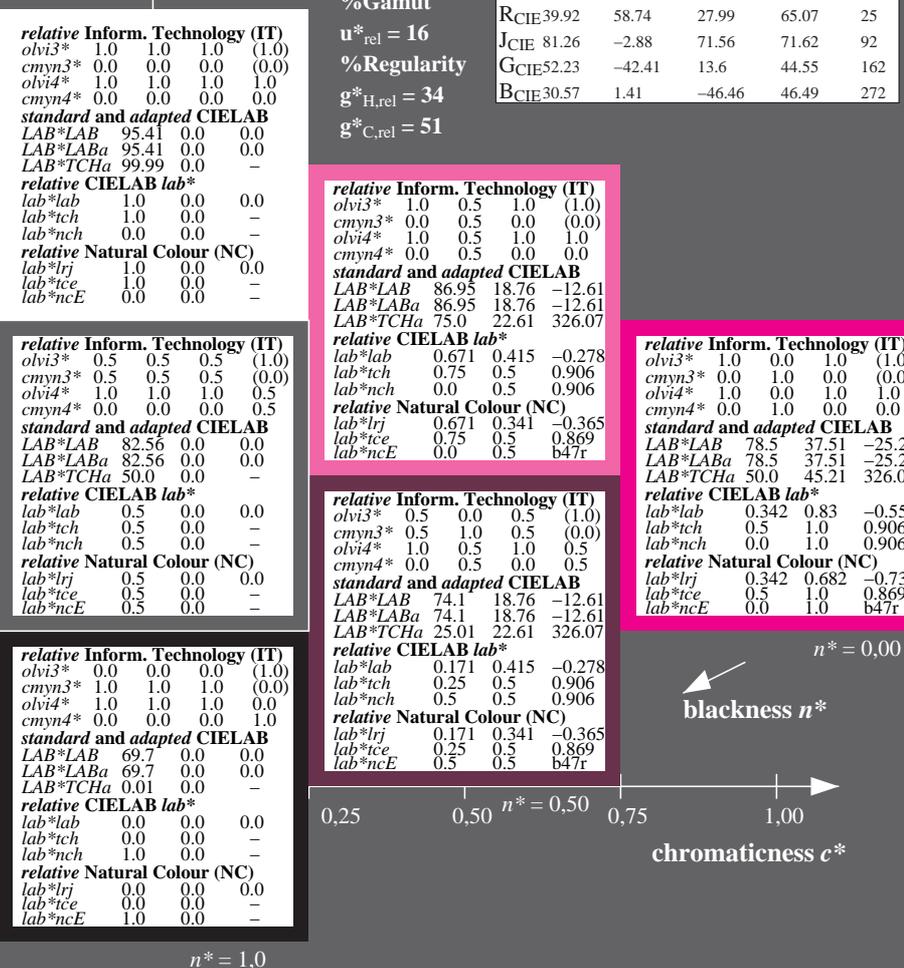
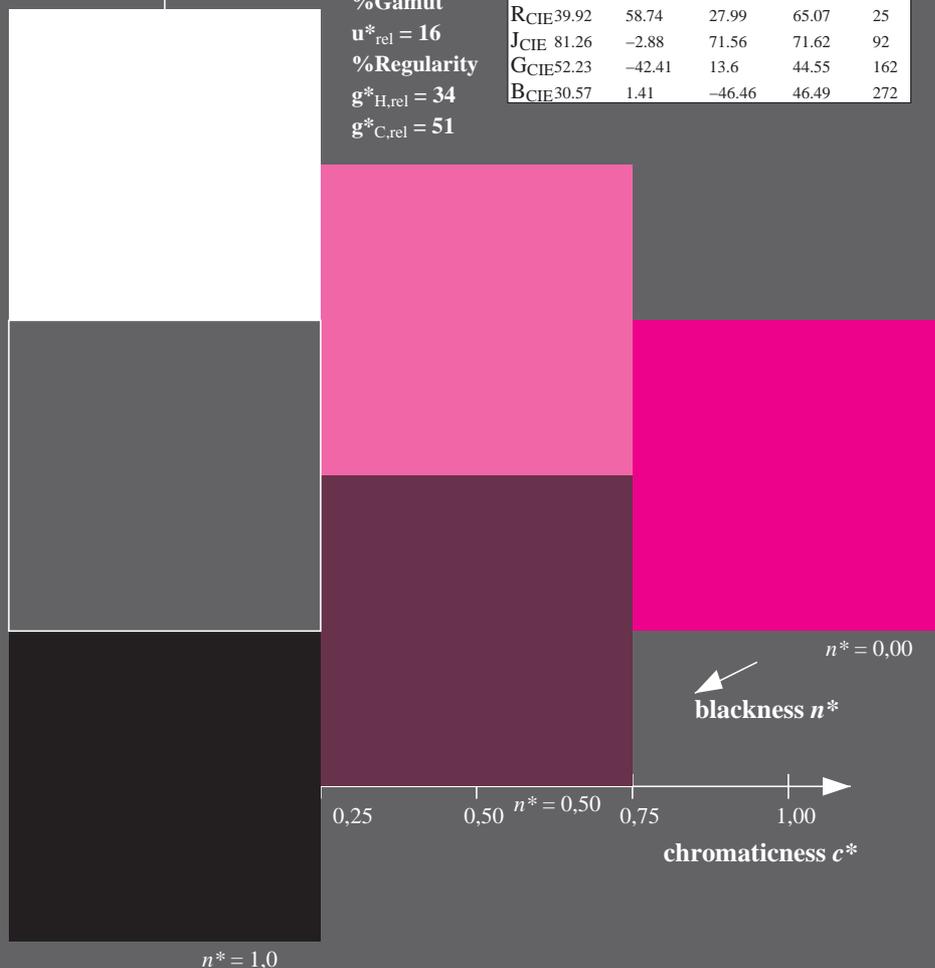
**relative Natural Colour (NC)**  
 $lab^*lrj = 0.171 \ 0.341 \ -0.365$   
 $lab^*tce = 0.25 \ 0.5 \ 0.869$   
 $lab^*nce = 0.5 \ 0.5 \ b47r$

**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 0.0 \ 1.0 \ (1.0)$   
 $cmyn3^* = 0.0 \ 1.0 \ 0.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 0.0 \ 1.0 \ 1.0$   
 $cmyn4^* = 0.0 \ 1.0 \ 0.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 78.5 \ 37.51 \ -25.22$   
 $LAB^*LABa = 78.5 \ 37.51 \ -25.22$   
 $LAB^*TCHa = 50.0 \ 45.21 \ 326.07$

**relative CIELAB lab\***  
 $lab^*lab = 0.342 \ 0.83 \ -0.557$   
 $lab^*tch = 0.5 \ 1.0 \ 0.906$   
 $lab^*nch = 0.0 \ 1.0 \ 0.906$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.342 \ 0.682 \ -0.73$   
 $lab^*tce = 0.5 \ 1.0 \ 0.869$   
 $lab^*nce = 0.0 \ 1.0 \ b47r$



OE090-7, 3 step scales for constant CIELAB hue 326/360 = 0.906 (left)

3 step scales for constant CIELAB hue 326/360 = 0.906 (right)

BAM-test chart OE09; Colorimetric systems TLS70 & TLS70  
 D65: 3 step colour scales and coordinate data for 10 hues

input:  $cmY0^* \ setcmykcolor$   
 output:  $cmY0^* / 000n^* \ setcmykcolor$

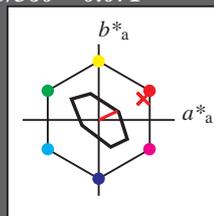
See for similar files: <http://www.ps.bam.de/OE09/>  
 Technical information: <http://www.ps.bam.de>  
 Version 2.1, io=0.0, CIELAB

BAM registration: 20060101-OE09/10S/S09E05FP.PS/.PDF  
 application for evaluation and measurement of printer or monitor systems  
 BAM material: code=rh4da  
 /OE09/ Form: 6/10, Serie: 1/1, Page: 6  
 Page count: 6

**Input: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 25/360 = 0.071$   
 $lab^*tch$  and  $lab^*nch$

D65: hue R  
 LCH\*Ma: 77 27 25  
 olv\*Ma: 1.0 0.05 0.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

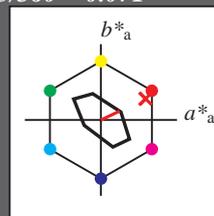
	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
OMa	76.43	26.27	10.57	28.32	22
YMa	93.93	-10.76	34.63	36.27	107
LMa	89.32	-35.8	27.64	45.24	142
CMa	90.93	-21.95	-7.07	23.07	198
VMa	72.1	15.76	-35.63	38.97	294
M <sub>Ma</sub>	78.5	37.52	-25.23	45.22	326
N <sub>Ma</sub>	69.7	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.74	27.99	65.07	25
JCIE	81.26	-2.88	71.56	71.62	92
GCIE	52.23	-42.41	13.6	44.55	162
BCIE	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**Output: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 25/360 = 0.071$   
 $lab^*tch$  and  $lab^*nch$

D65: hue R  
 LCH\*Ma: 77 27 25  
 olv\*Ma: 1.0 0.05 0.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
OMa	76.43	26.27	10.57	28.32	22
YMa	93.93	-10.76	34.63	36.27	107
LMa	89.32	-35.8	27.64	45.24	142
CMa	90.93	-21.95	-7.07	23.07	198
VMa	72.1	15.76	-35.63	38.97	294
M <sub>Ma</sub>	78.5	37.52	-25.23	45.22	326
N <sub>Ma</sub>	69.7	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.74	27.99	65.07	25
JCIE	81.26	-2.88	71.56	71.62	92
GCIE	52.23	-42.41	13.6	44.55	162
BCIE	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

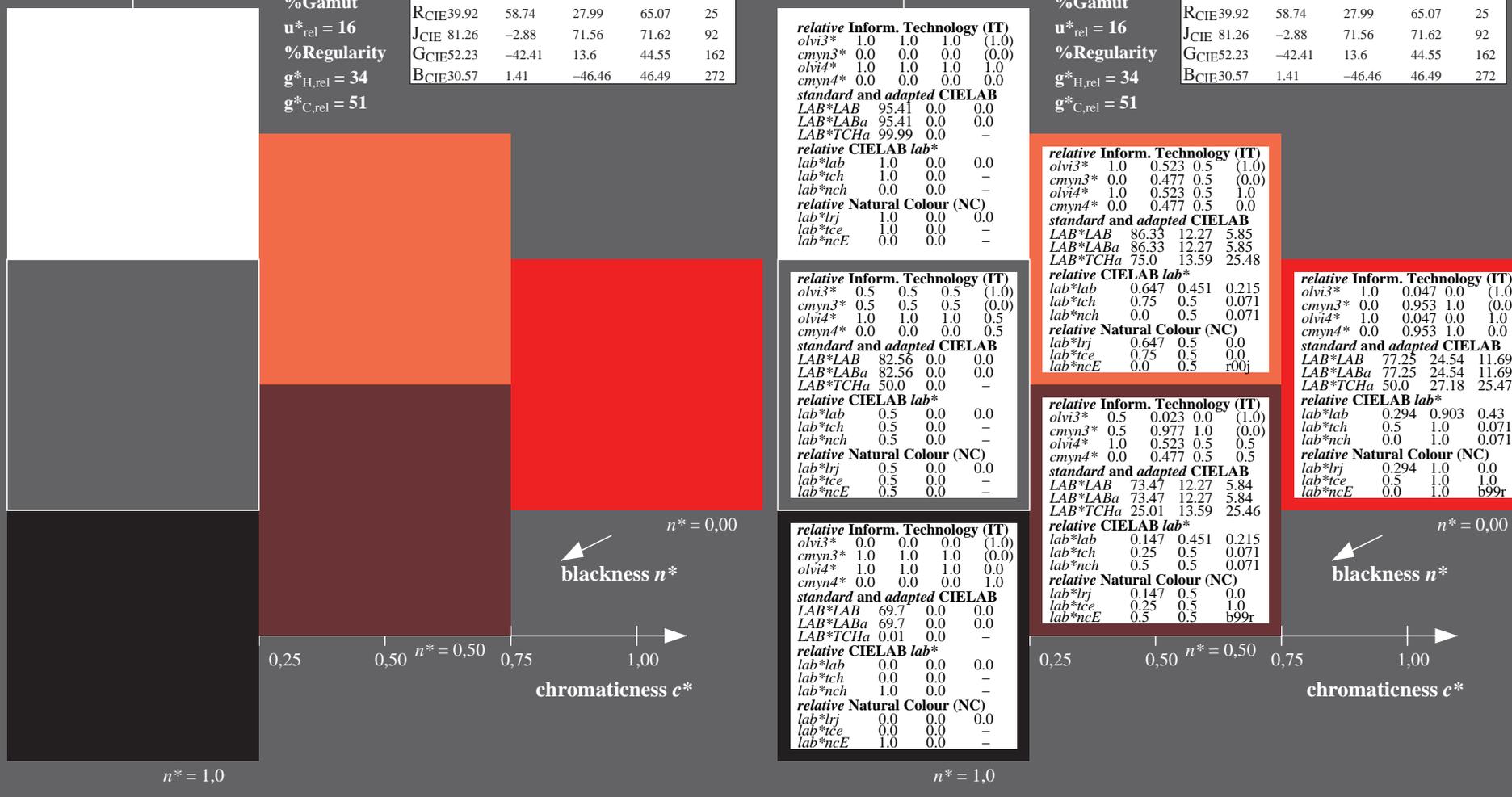
**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 1.0 \ 1.0 \ (1.0)$   
 $cmyn3^* = 0.0 \ 0.0 \ 0.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 1.0$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.0$   
**standard and adapted CIELAB**  
 $LAB^*LAB = 95.41 \ 0.0 \ 0.0$   
 $LAB^*LABa = 95.41 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 99.99 \ 0.0 \ -$   
**relative CIELAB lab\***  
 $lab^*lab = 1.0 \ 0.0 \ 0.0$   
 $lab^*tch = 1.0 \ 0.0 \ -$   
 $lab^*nch = 0.0 \ 0.0 \ -$   
**relative Natural Colour (NC)**  
 $lab^*lrj = 1.0 \ 0.0 \ 0.0$   
 $lab^*tce = 1.0 \ 0.0 \ -$   
 $lab^*nce = 0.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 0.523 \ 0.5 \ (1.0)$   
 $cmyn3^* = 0.0 \ 0.477 \ 0.5 \ (0.0)$   
 $olvi4^* = 1.0 \ 0.523 \ 0.5 \ 1.0$   
 $cmyn4^* = 0.0 \ 0.477 \ 0.5 \ 0.0$   
**standard and adapted CIELAB**  
 $LAB^*LAB = 86.33 \ 12.27 \ 5.85$   
 $LAB^*LABa = 86.33 \ 12.27 \ 5.85$   
 $LAB^*TCHa = 75.0 \ 13.59 \ 25.48$   
**relative CIELAB lab\***  
 $lab^*lab = 0.647 \ 0.451 \ 0.215$   
 $lab^*tch = 0.75 \ 0.5 \ 0.071$   
 $lab^*nch = 0.0 \ 0.5 \ 0.071$   
**relative Natural Colour (NC)**  
 $lab^*lrj = 0.647 \ 0.5 \ 0.0$   
 $lab^*tce = 0.75 \ 0.5 \ 0.0$   
 $lab^*nce = 0.0 \ 0.5 \ r00j$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.5 \ 0.5 \ (1.0)$   
 $cmyn3^* = 0.5 \ 0.5 \ 0.5 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.5$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.5$   
**standard and adapted CIELAB**  
 $LAB^*LAB = 82.56 \ 0.0 \ 0.0$   
 $LAB^*LABa = 82.56 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 50.0 \ 0.0 \ -$   
**relative CIELAB lab\***  
 $lab^*lab = 0.5 \ 0.0 \ 0.0$   
 $lab^*tch = 0.5 \ 0.0 \ -$   
 $lab^*nch = 0.5 \ 0.0 \ -$   
**relative Natural Colour (NC)**  
 $lab^*lrj = 0.5 \ 0.0 \ 0.0$   
 $lab^*tce = 0.5 \ 0.0 \ -$   
 $lab^*nce = 0.5 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.023 \ 0.0 \ (1.0)$   
 $cmyn3^* = 0.5 \ 0.977 \ 1.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 0.523 \ 0.5 \ 0.5$   
 $cmyn4^* = 0.0 \ 0.477 \ 0.5 \ 0.5$   
**standard and adapted CIELAB**  
 $LAB^*LAB = 73.47 \ 12.27 \ 5.84$   
 $LAB^*LABa = 73.47 \ 12.27 \ 5.84$   
 $LAB^*TCHa = 25.01 \ 13.59 \ 25.46$   
**relative CIELAB lab\***  
 $lab^*lab = 0.147 \ 0.451 \ 0.215$   
 $lab^*tch = 0.25 \ 0.5 \ 0.071$   
 $lab^*nch = 0.5 \ 0.5 \ 0.071$   
**relative Natural Colour (NC)**  
 $lab^*lrj = 0.147 \ 0.5 \ 0.0$   
 $lab^*tce = 0.25 \ 0.5 \ 1.0$   
 $lab^*nce = 0.5 \ 0.5 \ b99r$

**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 0.047 \ 0.0 \ (1.0)$   
 $cmyn3^* = 0.0 \ 0.953 \ 1.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 0.047 \ 0.0 \ 1.0$   
 $cmyn4^* = 0.0 \ 0.953 \ 1.0 \ 0.0$   
**standard and adapted CIELAB**  
 $LAB^*LAB = 77.25 \ 24.54 \ 11.69$   
 $LAB^*LABa = 77.25 \ 24.54 \ 11.69$   
 $LAB^*TCHa = 50.0 \ 27.18 \ 25.47$   
**relative CIELAB lab\***  
 $lab^*lab = 0.294 \ 0.903 \ 0.43$   
 $lab^*tch = 0.5 \ 1.0 \ 0.071$   
 $lab^*nch = 0.0 \ 1.0 \ 0.071$   
**relative Natural Colour (NC)**  
 $lab^*lrj = 0.294 \ 1.0 \ 0.0$   
 $lab^*tce = 0.5 \ 1.0 \ 1.0$   
 $lab^*nce = 0.0 \ 1.0 \ b99r$



OE090-7, 3 step scales for constant CIELAB hue 25/360 = 0.071 (left)

3 step scales for constant CIELAB hue 25/360 = 0.071 (right)

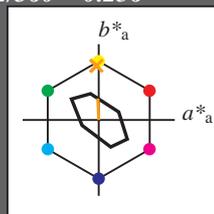
BAM-test chart OE09; Colorimetric systems TLS70 & TLS70  
 D65: 3 step colour scales and coordinate data for 10 hues

input:  $cmY0^* \ setcmykcolor$   
 output:  $cmY0^* / 000n^* \ setcmykcolor$

**Input: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 92/360 = 0.256$   
 $lab^*tch$  and  $lab^*nch$

D65: hue J  
 LCH\*Ma: 89 28 92  
 olv\*Ma: 1.0 0.74 0.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

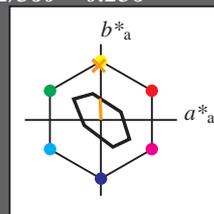
	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	76.43	26.27	10.57	28.32	22
Y <sub>Ma</sub>	93.93	-10.76	34.63	36.27	107
L <sub>Ma</sub>	89.32	-35.8	27.64	45.24	142
C <sub>Ma</sub>	90.93	-21.95	-7.07	23.07	198
V <sub>Ma</sub>	72.1	15.76	-35.63	38.97	294
M <sub>Ma</sub>	78.5	37.52	-25.23	45.22	326
N <sub>Ma</sub>	69.7	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
R <sub>CIE</sub>	39.92	58.74	27.99	65.07	25
J <sub>CIE</sub>	81.26	-2.88	71.56	71.62	92
G <sub>CIE</sub>	52.23	-42.41	13.6	44.55	162
B <sub>CIE</sub>	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**Output: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 92/360 = 0.256$   
 $lab^*tch$  and  $lab^*nch$

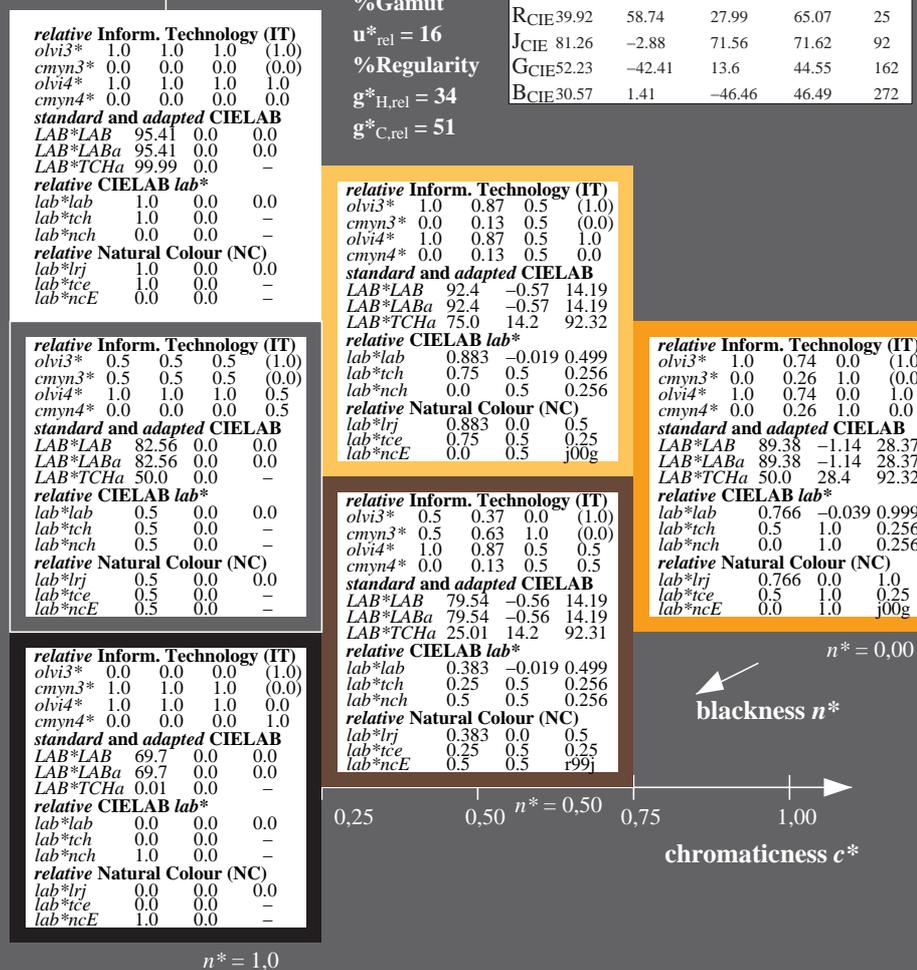
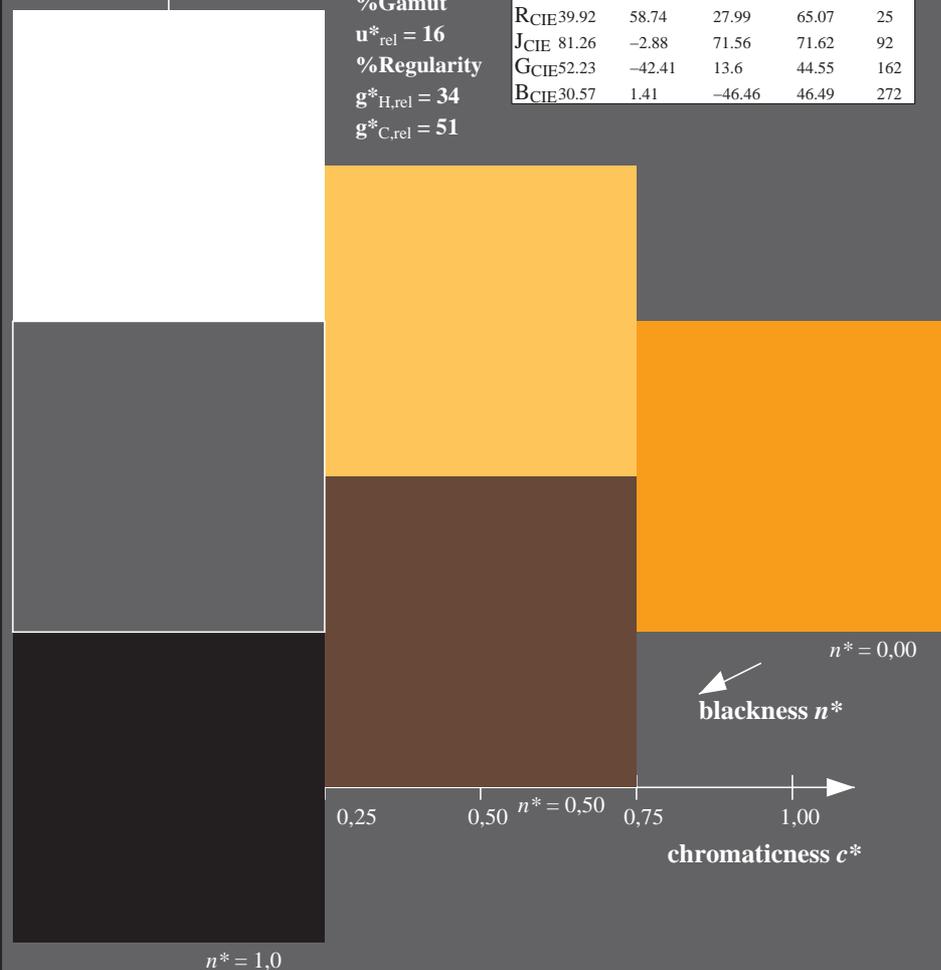
D65: hue J  
 LCH\*Ma: 89 28 92  
 olv\*Ma: 1.0 0.74 0.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
O <sub>Ma</sub>	76.43	26.27	10.57	28.32	22
Y <sub>Ma</sub>	93.93	-10.76	34.63	36.27	107
L <sub>Ma</sub>	89.32	-35.8	27.64	45.24	142
C <sub>Ma</sub>	90.93	-21.95	-7.07	23.07	198
V <sub>Ma</sub>	72.1	15.76	-35.63	38.97	294
M <sub>Ma</sub>	78.5	37.52	-25.23	45.22	326
N <sub>Ma</sub>	69.7	0.0	0.0	0.0	0
W <sub>Ma</sub>	95.41	0.0	0.0	0.0	0
R <sub>CIE</sub>	39.92	58.74	27.99	65.07	25
J <sub>CIE</sub>	81.26	-2.88	71.56	71.62	92
G <sub>CIE</sub>	52.23	-42.41	13.6	44.55	162
B <sub>CIE</sub>	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$



**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 1.0 \ 1.0 \ (1.0)$   
 $cmym3^* = 0.0 \ 0.0 \ 0.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 1.0$   
 $cmym4^* = 0.0 \ 0.0 \ 0.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 95.41 \ 0.0 \ 0.0$   
 $LAB^*LABa = 95.41 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 99.99 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 1.0 \ 0.0 \ 0.0$   
 $lab^*tch = 1.0 \ 0.0 \ -$   
 $lab^*nch = 0.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 1.0 \ 0.0 \ 0.0$   
 $lab^*tce = 1.0 \ 0.0 \ -$   
 $lab^*nce = 0.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.5 \ 0.5 \ (1.0)$   
 $cmym3^* = 0.5 \ 0.5 \ 0.5 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.5$   
 $cmym4^* = 0.0 \ 0.0 \ 0.0 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 82.56 \ 0.0 \ 0.0$   
 $LAB^*LABa = 82.56 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 50.0 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.5 \ 0.0 \ 0.0$   
 $lab^*tch = 0.5 \ 0.0 \ -$   
 $lab^*nch = 0.5 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.5 \ 0.0 \ 0.0$   
 $lab^*tce = 0.5 \ 0.0 \ -$   
 $lab^*nce = 0.5 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 0.0 \ 0.0 \ (1.0)$   
 $cmym3^* = 1.0 \ 1.0 \ 1.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.0$   
 $cmym4^* = 0.0 \ 0.0 \ 0.0 \ 1.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 69.7 \ 0.0 \ 0.0$   
 $LAB^*LABa = 69.7 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 0.01 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.0 \ 0.0 \ 0.0$   
 $lab^*tch = 0.0 \ 0.0 \ -$   
 $lab^*nch = 1.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.0 \ 0.0 \ 0.0$   
 $lab^*tce = 0.0 \ 0.0 \ -$   
 $lab^*nce = 1.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 0.87 \ 0.5 \ (1.0)$   
 $cmym3^* = 0.0 \ 0.13 \ 0.5 \ (0.0)$   
 $olvi4^* = 1.0 \ 0.87 \ 0.5 \ 1.0$   
 $cmym4^* = 0.0 \ 0.13 \ 0.5 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 92.4 \ -0.57 \ 14.19$   
 $LAB^*LABa = 92.4 \ -0.57 \ 14.19$   
 $LAB^*TCHa = 75.0 \ 14.2 \ 92.32$

**relative CIELAB lab\***  
 $lab^*lab = 0.883 \ -0.019 \ 0.499$   
 $lab^*tch = 0.75 \ 0.5 \ 0.256$   
 $lab^*nch = 0.0 \ 0.5 \ 0.256$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.883 \ 0.0 \ 0.5$   
 $lab^*tce = 0.75 \ 0.5 \ 0.25$   
 $lab^*nce = 0.0 \ 0.5 \ j00g$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.37 \ 0.0 \ (1.0)$   
 $cmym3^* = 0.5 \ 0.63 \ 1.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 0.87 \ 0.5 \ 0.5$   
 $cmym4^* = 0.0 \ 0.13 \ 0.5 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 79.54 \ -0.56 \ 14.19$   
 $LAB^*LABa = 79.54 \ -0.56 \ 14.19$   
 $LAB^*TCHa = 25.01 \ 14.2 \ 92.31$

**relative CIELAB lab\***  
 $lab^*lab = 0.383 \ -0.019 \ 0.499$   
 $lab^*tch = 0.25 \ 0.5 \ 0.256$   
 $lab^*nch = 0.5 \ 0.5 \ 0.256$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.383 \ 0.0 \ 0.5$   
 $lab^*tce = 0.25 \ 0.5 \ 0.25$   
 $lab^*nce = 0.5 \ 0.5 \ j99j$

**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 0.74 \ 0.0 \ (1.0)$   
 $cmym3^* = 0.0 \ 0.26 \ 1.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 0.74 \ 0.0 \ 1.0$   
 $cmym4^* = 0.0 \ 0.26 \ 1.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 89.38 \ -1.14 \ 28.37$   
 $LAB^*LABa = 89.38 \ -1.14 \ 28.37$   
 $LAB^*TCHa = 50.0 \ 28.4 \ 92.32$

**relative CIELAB lab\***  
 $lab^*lab = 0.766 \ -0.039 \ 0.999$   
 $lab^*tch = 0.5 \ 1.0 \ 0.256$   
 $lab^*nch = 0.0 \ 1.0 \ 0.256$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.766 \ 0.0 \ 1.0$   
 $lab^*tce = 0.5 \ 1.0 \ 0.25$   
 $lab^*nce = 0.0 \ 1.0 \ j00g$

See for similar files: <http://www.ps.bam.de/OE09/>  
 Technical information: <http://www.ps.bam.de>  
 Version 2.1, io=0.0, CIELAB

BAM registration: 20060101-OE09/10S/S09E07FP.PS/.PDF BAM material: code=rh4ta  
 application for evaluation and measurement of printer or monitor systems  
 /OE09/ Form: 8/10, Serie: 1/1, Page: 8 Page count: 8

OE090-7, 3 step scales for constant CIE LAB hue 92/360 = 0.256 (left)

3 step scales for constant CIE LAB hue 92/360 = 0.256 (right)

BAM-test chart OE09; Colorimetric systems TLS70 & TLS70  
 D65: 3 step colour scales and coordinate data for 10 hues

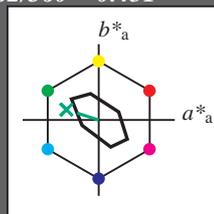
input:  $cmY0^* \ setcmykcolor$   
 output:  $cmY0^* / 000n^* \ setcmykcolor$

**Input: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 162/360 = 0.451$   
 $lab^*tch$  and  $lab^*nch$

D65: hue G  
 LCH\*Ma: 90 30 162  
 olv\*Ma: 0.0 1.0 0.53

triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
OMa	76.43	26.27	10.57	28.32	22
YMa	93.93	-10.76	34.63	36.27	107
LMa	89.32	-35.8	27.64	45.24	142
CMa	90.93	-21.95	-7.07	23.07	198
VMa	72.1	15.76	-35.63	38.97	294
MMa	78.5	37.52	-25.23	45.22	326
NMa	69.7	0.0	0.0	0.0	0
WMa	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.74	27.99	65.07	25
JCIE	81.26	-2.88	71.56	71.62	92
GCIE	52.23	-42.41	13.6	44.55	162
BCIE	30.57	1.41	-46.46	46.49	272

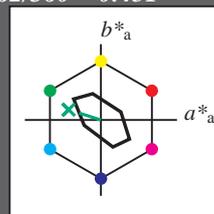
%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**Output: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 162/360 = 0.451$   
 $lab^*tch$  and  $lab^*nch$

D65: hue G  
 LCH\*Ma: 90 30 162  
 olv\*Ma: 0.0 1.0 0.53

triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
OMa	76.43	26.27	10.57	28.32	22
YMa	93.93	-10.76	34.63	36.27	107
LMa	89.32	-35.8	27.64	45.24	142
CMa	90.93	-21.95	-7.07	23.07	198
VMa	72.1	15.76	-35.63	38.97	294
MMa	78.5	37.52	-25.23	45.22	326
NMa	69.7	0.0	0.0	0.0	0
WMa	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.74	27.99	65.07	25
JCIE	81.26	-2.88	71.56	71.62	92
GCIE	52.23	-42.41	13.6	44.55	162
BCIE	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 1.0 \ 1.0 \ (1.0)$   
 $cmyn3^* = 0.0 \ 0.0 \ 0.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 1.0$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 95.41 \ 0.0 \ 0.0$   
 $LAB^*LABa = 95.41 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 99.99 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 1.0 \ 0.0 \ 0.0$   
 $lab^*tch = 1.0 \ 0.0 \ -$   
 $lab^*nch = 0.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 1.0 \ 0.0 \ 0.0$   
 $lab^*tce = 1.0 \ 0.0 \ -$   
 $lab^*nce = 0.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.5 \ 0.5 \ (1.0)$   
 $cmyn3^* = 0.5 \ 0.5 \ 0.5 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.5$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 82.56 \ 0.0 \ 0.0$   
 $LAB^*LABa = 82.56 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 50.0 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.5 \ 0.0 \ 0.0$   
 $lab^*tch = 0.5 \ 0.0 \ -$   
 $lab^*nch = 0.5 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.5 \ 0.0 \ 0.0$   
 $lab^*tce = 0.5 \ 0.0 \ -$   
 $lab^*nce = 0.5 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 0.0 \ 0.0 \ (1.0)$   
 $cmyn3^* = 1.0 \ 1.0 \ 1.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.0$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 1.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 69.7 \ 0.0 \ 0.0$   
 $LAB^*LABa = 69.7 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 0.01 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.0 \ 0.0 \ 0.0$   
 $lab^*tch = 0.0 \ 0.0 \ -$   
 $lab^*nch = 1.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.0 \ 0.0 \ 0.0$   
 $lab^*tce = 0.0 \ 0.0 \ -$   
 $lab^*nce = 1.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 1.0 \ 0.767 \ (1.0)$   
 $cmyn3^* = 0.5 \ 0.0 \ 0.233 \ (0.0)$   
 $olvi4^* = 0.5 \ 1.0 \ 0.767 \ 1.0$   
 $cmyn4^* = 0.5 \ 0.0 \ 0.233 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 92.79 \ -14.2 \ 4.55$   
 $LAB^*LABa = 92.79 \ -14.2 \ 4.55$   
 $LAB^*TCHa = 75.0 \ 14.92 \ 162.23$

**relative CIELAB lab\***  
 $lab^*lab = 0.898 \ -0.475 \ 0.153$   
 $lab^*tch = 0.75 \ 0.5 \ 0.451$   
 $lab^*nch = 0.0 \ 0.5 \ 0.451$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.898 \ -0.499 \ 0.0$   
 $lab^*tce = 0.75 \ 0.5 \ 0.5$   
 $lab^*nce = 0.0 \ 0.5 \ g00b$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 0.5 \ 0.267 \ (1.0)$   
 $cmyn3^* = 1.0 \ 0.5 \ 0.733 \ (0.0)$   
 $olvi4^* = 0.5 \ 1.0 \ 0.767 \ 0.5$   
 $cmyn4^* = 0.5 \ 0.0 \ 0.233 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 79.94 \ -14.2 \ 4.56$   
 $LAB^*LABa = 79.94 \ -14.2 \ 4.56$   
 $LAB^*TCHa = 25.01 \ 14.92 \ 162.22$

**relative CIELAB lab\***  
 $lab^*lab = 0.398 \ -0.475 \ 0.153$   
 $lab^*tch = 0.25 \ 0.5 \ 0.451$   
 $lab^*nch = 0.5 \ 0.5 \ 0.451$

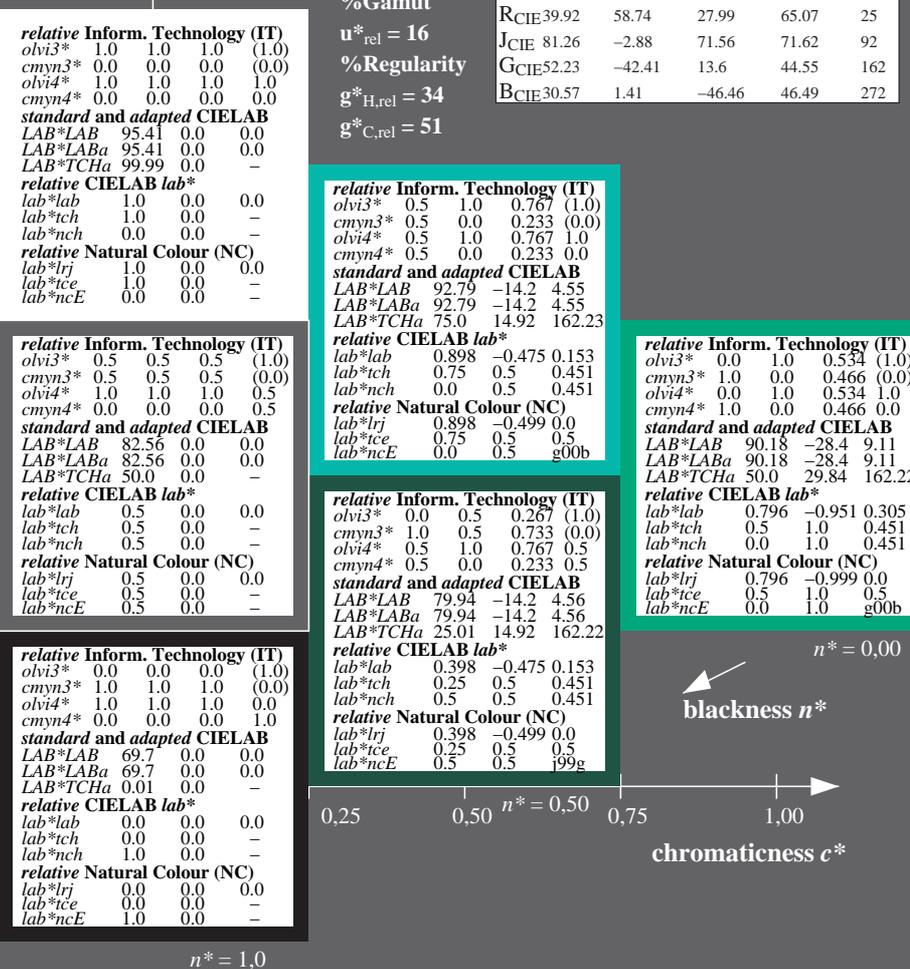
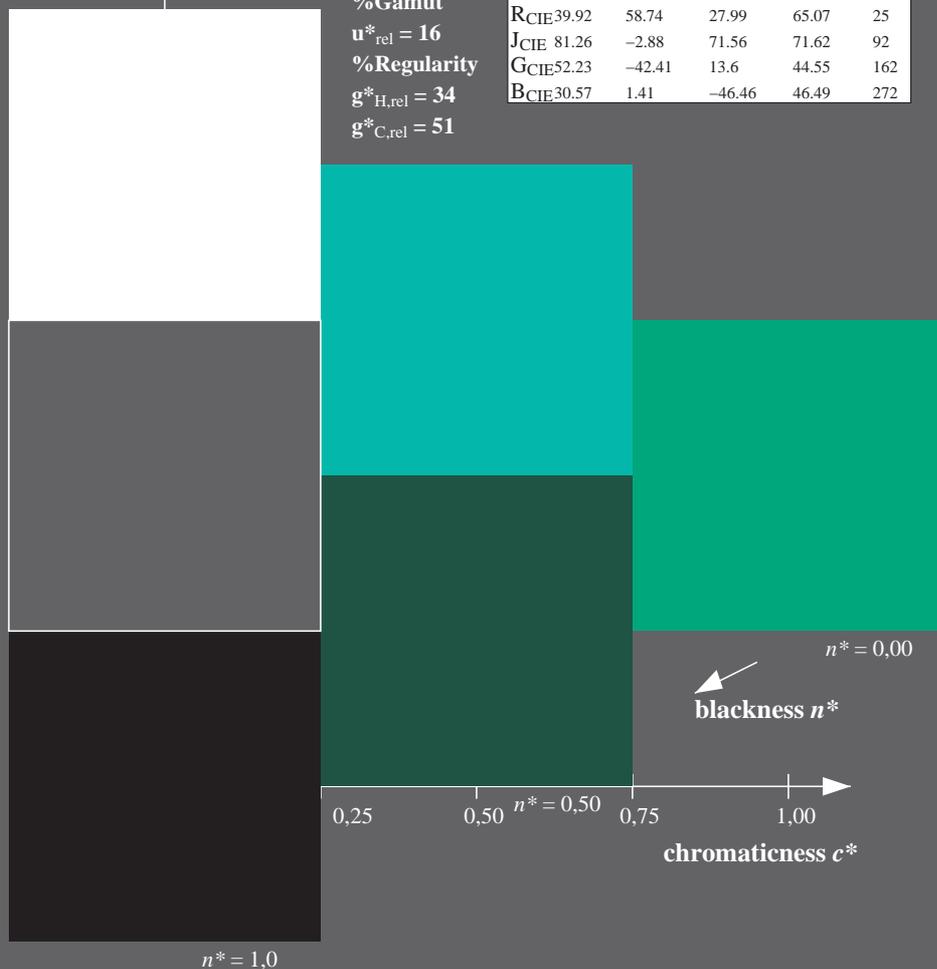
**relative Natural Colour (NC)**  
 $lab^*lrj = 0.398 \ -0.499 \ 0.0$   
 $lab^*tce = 0.25 \ 0.5 \ 0.5$   
 $lab^*nce = 0.5 \ 0.5 \ g99g$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 1.0 \ 0.534 \ (1.0)$   
 $cmyn3^* = 1.0 \ 0.0 \ 0.466 \ (0.0)$   
 $olvi4^* = 0.0 \ 1.0 \ 0.534 \ 1.0$   
 $cmyn4^* = 1.0 \ 0.0 \ 0.466 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 90.18 \ -28.4 \ 9.11$   
 $LAB^*LABa = 90.18 \ -28.4 \ 9.11$   
 $LAB^*TCHa = 50.0 \ 29.84 \ 162.22$

**relative CIELAB lab\***  
 $lab^*lab = 0.796 \ -0.951 \ 0.305$   
 $lab^*tch = 0.5 \ 1.0 \ 0.451$   
 $lab^*nch = 0.0 \ 1.0 \ 0.451$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.796 \ -0.999 \ 0.0$   
 $lab^*tce = 0.5 \ 1.0 \ 0.5$   
 $lab^*nce = 0.0 \ 1.0 \ g00b$



OE090-7, 3 step scales for constant CIE LAB hue 162/360 = 0.451 (left)

3 step scales for constant CIE LAB hue 162/360 = 0.451 (right)

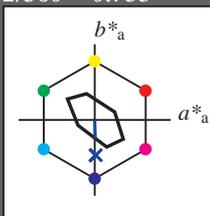
BAM-test chart OE09; Colorimetric systems TLS70 & TLS70  
 D65: 3 step colour scales and coordinate data for 10 hues

input:  $cmY0^* \ setcmykcolor$   
 output:  $cmY0^* / 000n^* \ setcmykcolor$

**Input: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 272/360 = 0.755$   
 $lab^*tch$  and  $lab^*nch$

D65: hue B  
 LCH\*Ma: 80 24 272  
 olv\*Ma: 0.0 0.4 1.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

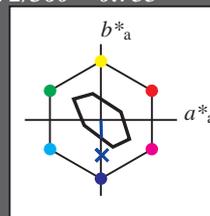
	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
OMa	76.43	26.27	10.57	28.32	22
YMa	93.93	-10.76	34.63	36.27	107
LMa	89.32	-35.8	27.64	45.24	142
CMa	90.93	-21.95	-7.07	23.07	198
VMa	72.1	15.76	-35.63	38.97	294
MMa	78.5	37.52	-25.23	45.22	326
NMa	69.7	0.0	0.0	0.0	0
WMa	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.74	27.99	65.07	25
JCIE	81.26	-2.88	71.56	71.62	92
GCIE	52.23	-42.41	13.6	44.55	162
BCIE	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$

**Output: Colorimetric Television Luminous System TLS70**

for hue  $h^* = lab^*h = 272/360 = 0.755$   
 $lab^*tch$  and  $lab^*nch$

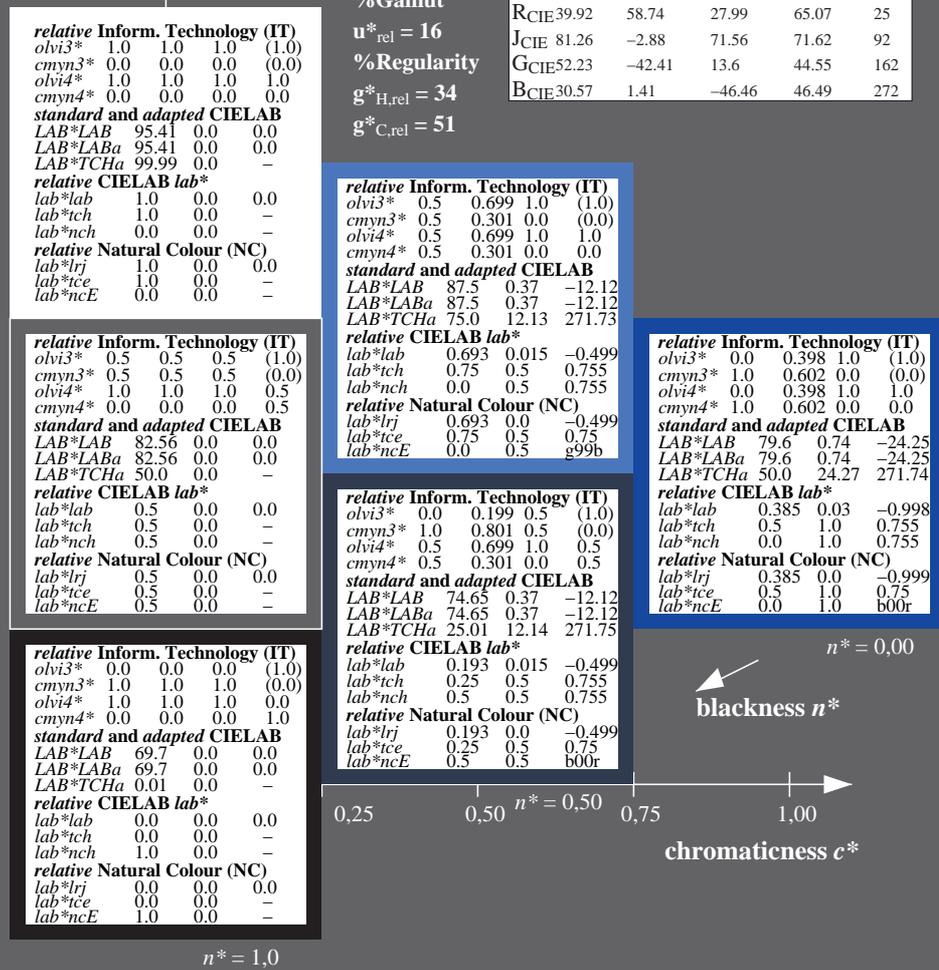
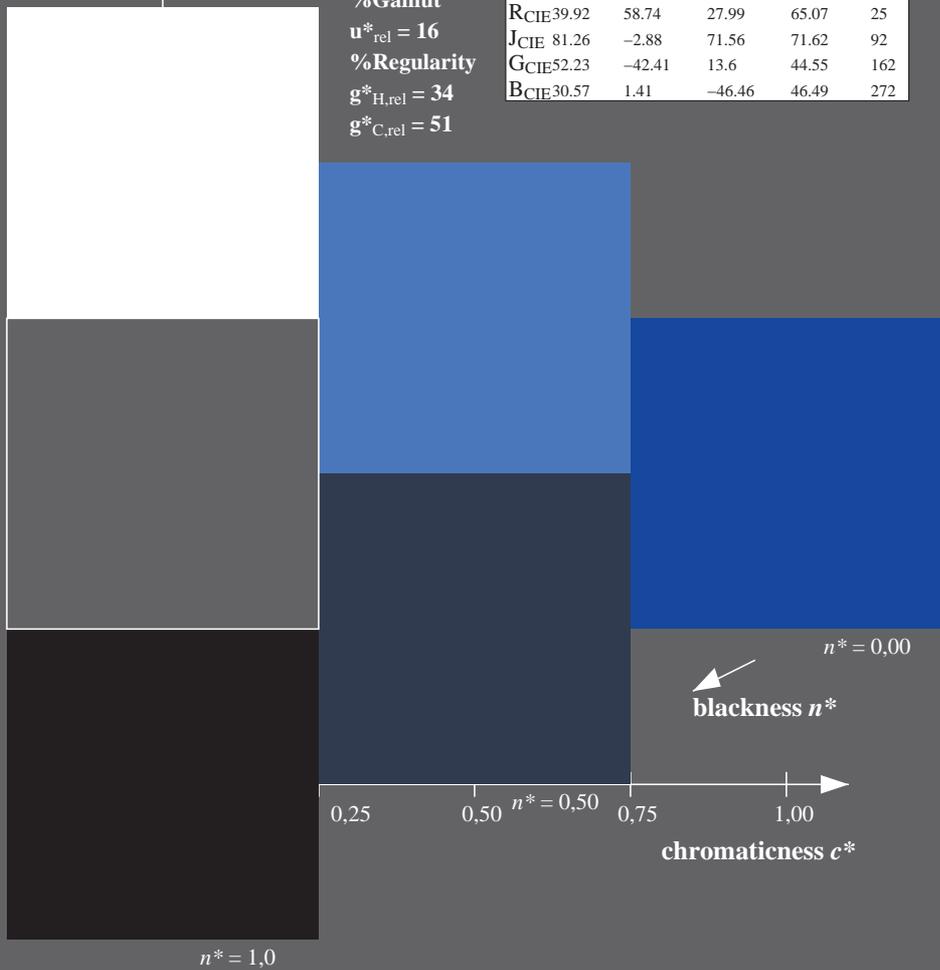
D65: hue B  
 LCH\*Ma: 80 24 272  
 olv\*Ma: 0.0 0.4 1.0  
 triangle lightness  $t^*$



**TLS70; adapted (a) CIELAB data**

	$L^*=L^*_a$	$a^*_a$	$b^*_a$	$C^*_{ab,a}$	$h^*_{ab,a}$
OMa	76.43	26.27	10.57	28.32	22
YMa	93.93	-10.76	34.63	36.27	107
LMa	89.32	-35.8	27.64	45.24	142
CMa	90.93	-21.95	-7.07	23.07	198
VMa	72.1	15.76	-35.63	38.97	294
MMa	78.5	37.52	-25.23	45.22	326
NMa	69.7	0.0	0.0	0.0	0
WMa	95.41	0.0	0.0	0.0	0
RCIE	39.92	58.74	27.99	65.07	25
JCIE	81.26	-2.88	71.56	71.62	92
GCIE	52.23	-42.41	13.6	44.55	162
BCIE	30.57	1.41	-46.46	46.49	272

%Gamut  
 $u^*_{rel} = 16$   
 %Regularity  
 $g^*_{H,rel} = 34$   
 $g^*_{C,rel} = 51$



**relative Inform. Technology (IT)**  
 $olvi3^* = 1.0 \ 1.0 \ 1.0 \ (1.0)$   
 $cmyn3^* = 0.0 \ 0.0 \ 0.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 1.0$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 95.41 \ 0.0 \ 0.0$   
 $LAB^*LABa = 95.41 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 99.99 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 1.0 \ 0.0 \ 0.0$   
 $lab^*tch = 1.0 \ 0.0 \ -$   
 $lab^*nch = 0.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 1.0 \ 0.0 \ 0.0$   
 $lab^*tce = 1.0 \ 0.0 \ -$   
 $lab^*nce = 0.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.5 \ 0.5 \ (1.0)$   
 $cmyn3^* = 0.5 \ 0.5 \ 0.5 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.5$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 82.56 \ 0.0 \ 0.0$   
 $LAB^*LABa = 82.56 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 50.0 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.5 \ 0.0 \ 0.0$   
 $lab^*tch = 0.5 \ 0.0 \ -$   
 $lab^*nch = 0.5 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.5 \ 0.0 \ 0.0$   
 $lab^*tce = 0.5 \ 0.0 \ -$   
 $lab^*nce = 0.5 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 0.0 \ 0.0 \ (1.0)$   
 $cmyn3^* = 1.0 \ 1.0 \ 1.0 \ (0.0)$   
 $olvi4^* = 1.0 \ 1.0 \ 1.0 \ 0.0$   
 $cmyn4^* = 0.0 \ 0.0 \ 0.0 \ 1.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 69.7 \ 0.0 \ 0.0$   
 $LAB^*LABa = 69.7 \ 0.0 \ 0.0$   
 $LAB^*TCHa = 0.01 \ 0.0 \ -$

**relative CIELAB lab\***  
 $lab^*lab = 0.0 \ 0.0 \ 0.0$   
 $lab^*tch = 0.0 \ 0.0 \ -$   
 $lab^*nch = 1.0 \ 0.0 \ -$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.0 \ 0.0 \ 0.0$   
 $lab^*tce = 0.0 \ 0.0 \ -$   
 $lab^*nce = 1.0 \ 0.0 \ -$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.5 \ 0.699 \ 1.0 \ (1.0)$   
 $cmyn3^* = 0.5 \ 0.301 \ 0.0 \ (0.0)$   
 $olvi4^* = 0.5 \ 0.699 \ 1.0 \ 1.0$   
 $cmyn4^* = 0.5 \ 0.301 \ 0.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 87.5 \ 0.37 \ -12.12$   
 $LAB^*LABa = 87.5 \ 0.37 \ -12.12$   
 $LAB^*TCHa = 75.0 \ 12.13 \ 271.73$

**relative CIELAB lab\***  
 $lab^*lab = 0.693 \ 0.015 \ -0.499$   
 $lab^*tch = 0.75 \ 0.5 \ 0.755$   
 $lab^*nch = 0.0 \ 0.5 \ 0.755$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.693 \ 0.0 \ -0.499$   
 $lab^*tce = 0.75 \ 0.5 \ 0.75$   
 $lab^*nce = 0.0 \ 0.5 \ g99b$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 0.199 \ 0.5 \ (1.0)$   
 $cmyn3^* = 1.0 \ 0.801 \ 0.5 \ (0.0)$   
 $olvi4^* = 0.5 \ 0.699 \ 1.0 \ 0.5$   
 $cmyn4^* = 0.5 \ 0.301 \ 0.0 \ 0.5$

**standard and adapted CIELAB**  
 $LAB^*LAB = 74.65 \ 0.37 \ -12.12$   
 $LAB^*LABa = 74.65 \ 0.37 \ -12.12$   
 $LAB^*TCHa = 25.01 \ 12.14 \ 271.75$

**relative CIELAB lab\***  
 $lab^*lab = 0.193 \ 0.015 \ -0.499$   
 $lab^*tch = 0.25 \ 0.5 \ 0.755$   
 $lab^*nch = 0.5 \ 0.5 \ 0.755$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.193 \ 0.0 \ -0.499$   
 $lab^*tce = 0.25 \ 0.5 \ 0.75$   
 $lab^*nce = 0.5 \ 0.5 \ b00r$

**relative Inform. Technology (IT)**  
 $olvi3^* = 0.0 \ 0.398 \ 1.0 \ (1.0)$   
 $cmyn3^* = 1.0 \ 0.602 \ 0.0 \ (0.0)$   
 $olvi4^* = 0.0 \ 0.398 \ 1.0 \ 1.0$   
 $cmyn4^* = 1.0 \ 0.602 \ 0.0 \ 0.0$

**standard and adapted CIELAB**  
 $LAB^*LAB = 79.6 \ 0.74 \ -24.25$   
 $LAB^*LABa = 79.6 \ 0.74 \ -24.25$   
 $LAB^*TCHa = 50.0 \ 24.27 \ 271.74$

**relative CIELAB lab\***  
 $lab^*lab = 0.385 \ 0.03 \ -0.998$   
 $lab^*tch = 0.5 \ 1.0 \ 0.755$   
 $lab^*nch = 0.0 \ 1.0 \ 0.755$

**relative Natural Colour (NC)**  
 $lab^*lrj = 0.385 \ 0.0 \ -0.999$   
 $lab^*tce = 0.5 \ 1.0 \ 0.75$   
 $lab^*nce = 0.0 \ 1.0 \ b00r$

See for similar files: <http://www.ps.bam.de/OE09/>  
 Technical information: <http://www.ps.bam.de>  
 Version 2.1, io=0.0, CIELAB

BAM registration: 20060101-OE09/10S/S09E09FP.PS/.PDF BAM material: code=rh4ta  
 application for evaluation and measurement of printer or monitor systems  
 /OE09/ Form: 10/105Ser: 1/1, Page: 10 Page count: 10

OE090-7, 3 step scales for constant CIELAB hue 272/360 = 0.755 (left)

3 step scales for constant CIELAB hue 272/360 = 0.755 (right)

BAM-test chart OE09; Colorimetric systems TLS70 & TLS70  
 D65: 3 step colour scales and coordinate data for 10 hues

input:  $cmY0^* \ setcmykcolor$   
 output:  $cmY0^* / 000n^* \ setcmykcolor$