

Input: Colorimetric Television Luminous System TLS70

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

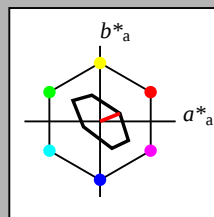
$lab^*ich$  and  $lab^*nch$

D65: hue O

LCH\*Ma: 76 28 22

olv\*Ma: 1.0 0.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 16$

%Regularity

$g^*_{H,rel} = 34$

$g^*_{C,rel} = 51$

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          |

Output: Colorimetric Television Luminous System TLS00

for hue  $h^* = lab^*h = 40/360 = 0.111$

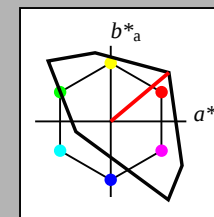
$lab^*ich$  and  $lab^*nch$

D65: hue O

LCH\*Ma: 51 100 40

olv\*Ma: 1.0 0.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 158$

%Regularity

$g^*_{H,rel} = 20$

$g^*_{C,rel} = 37$

TLS00; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O <sub>Ma</sub>  | 50.5        | 76.92   | 64.55   | 100.42       | 40           |
| Y <sub>Ma</sub>  | 92.66       | -20.69  | 90.75   | 93.08        | 103          |
| L <sub>Ma</sub>  | 83.63       | -82.75  | 79.9    | 115.04       | 136          |
| C <sub>Ma</sub>  | 86.88       | -46.16  | -13.55  | 48.12        | 196          |
| V <sub>Ma</sub>  | 30.39       | 76.06   | -103.59 | 128.52       | 306          |
| M <sub>Ma</sub>  | 57.3        | 94.35   | -58.41  | 110.97       | 328          |
| N <sub>Ma</sub>  | 0.01        | 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          |

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

$n^* = 0,50$

blackness  $n^*$

$n^* = 0,00$

$n^* = 0,50$

chromaticness  $c^*$

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

$n^* = 0,75$

$n^* = 0,50$

$n^* = 0,25$

$n^* = 0,00$

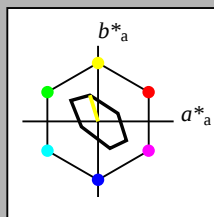
blackness  $n^*$

### Input: Colorimetric Television Luminous System TLS70

for hue  $h^* = \text{lab}^*h = 107/360 = 0.298$   
 $\text{lab}^*ich$  and  $\text{lab}^*nch$

D65: hue Y  
LCH\*Ma: 94 36 107  
olv\*Ma: 1.0 1.0 0.0

triangle lightness  $t^*$



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

### TLS70; adapted (a) CIELAB data

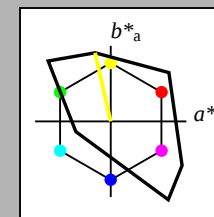
|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O <sub>Ma</sub>  | 76.43       | 26.27   | 10.57   | 28.32        | 22           |
| Y <sub>Ma</sub>  | 93.93       | -10.76  | 34.63   | 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          |

### Output: Colorimetric Television Luminous System TLS00

for hue  $h^* = \text{lab}^*h = 103/360 = 0.286$   
 $\text{lab}^*ich$  and  $\text{lab}^*nch$

D65: hue Y  
LCH\*Ma: 93 93 103  
olv\*Ma: 1.0 1.0 0.0

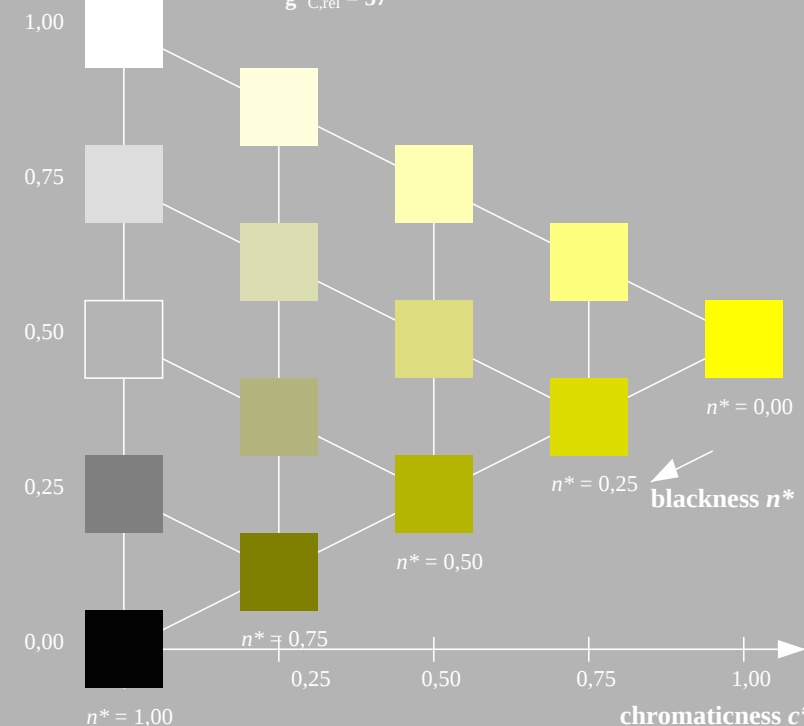
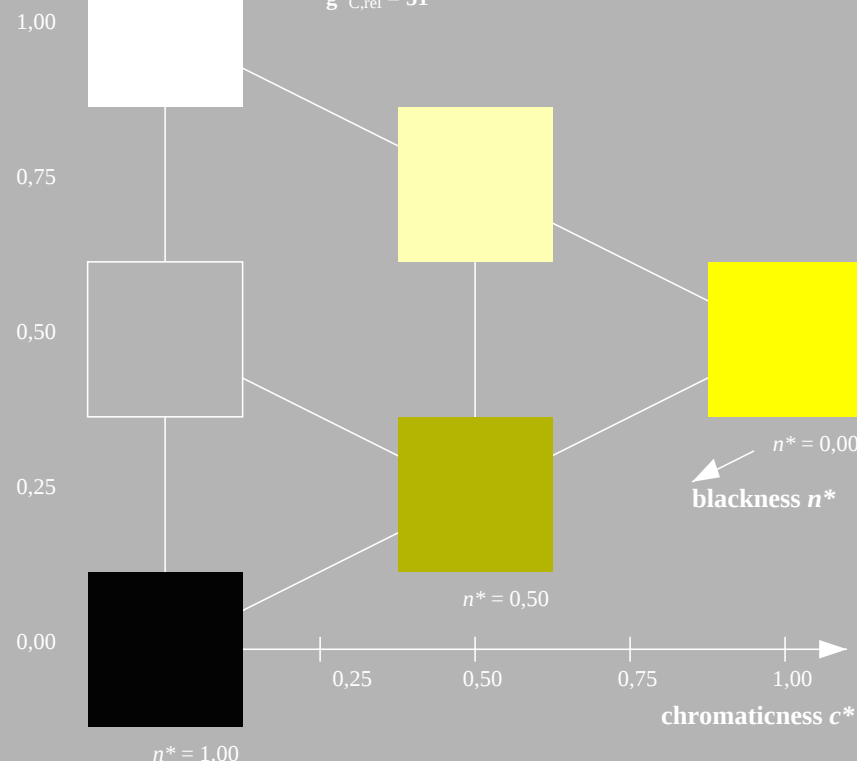
triangle lightness  $t^*$



%Gamut  
 $u^*_{\text{rel}} = 158$   
%Regularity  
 $g^*_{H,\text{rel}} = 20$   
 $g^*_{C,\text{rel}} = 37$

### TLS00; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O <sub>Ma</sub>  | 50.5        | 76.92   | 64.55   | 100.42       | 40           |
| Y <sub>Ma</sub>  | 92.66       | -20.69  | 90.75   | 93.08        | 103          |
| L <sub>Ma</sub>  | 83.63       | -82.75  | 79.9    | 115.04       | 136          |
| C <sub>Ma</sub>  | 86.88       | -46.16  | -13.55  | 48.12        | 196          |
| V <sub>Ma</sub>  | 30.39       | 76.06   | -103.59 | 128.52       | 306          |
| M <sub>Ma</sub>  | 57.3        | 94.35   | -58.41  | 110.97       | 328          |
| N <sub>Ma</sub>  | 0.01        | 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          |



NE680-7, 3 step scales for constant CIELAB hue 107/360 = 0.298 (left)

5 step scales for constant CIELAB hue 103/360 = 0.286 (right)

BAM-test chart NE68; Colorimetric systems TLS70 & TLS00  
D65: 3 and 5 step colour scales for 10 hues

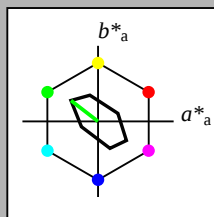
input:  $\text{olv}^* \text{setrgbcolor}$   
output:  $\text{olv}^* \text{setrgbcolor} / w^* \text{setgray}$

### Input: Colorimetric Television Luminous System TLS70

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

D65: hue L  
LCH\*Ma: 89 45 142  
olv\*Ma: 0.0 1.0 0.0

triangle lightness  $t^*$



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

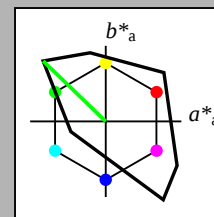
| TLS70; adapted (a) CIELAB data |         |         |              |              |     |
|--------------------------------|---------|---------|--------------|--------------|-----|
| $L^*=L^*_a$                    | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |     |
| OMa                            | 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 |

### Output: Colorimetric Television Luminous System TLS00

for hue  $h^* = lab^*h = 136/360 = 0.378$   
 $lab^*ich$  and  $lab^*nch$

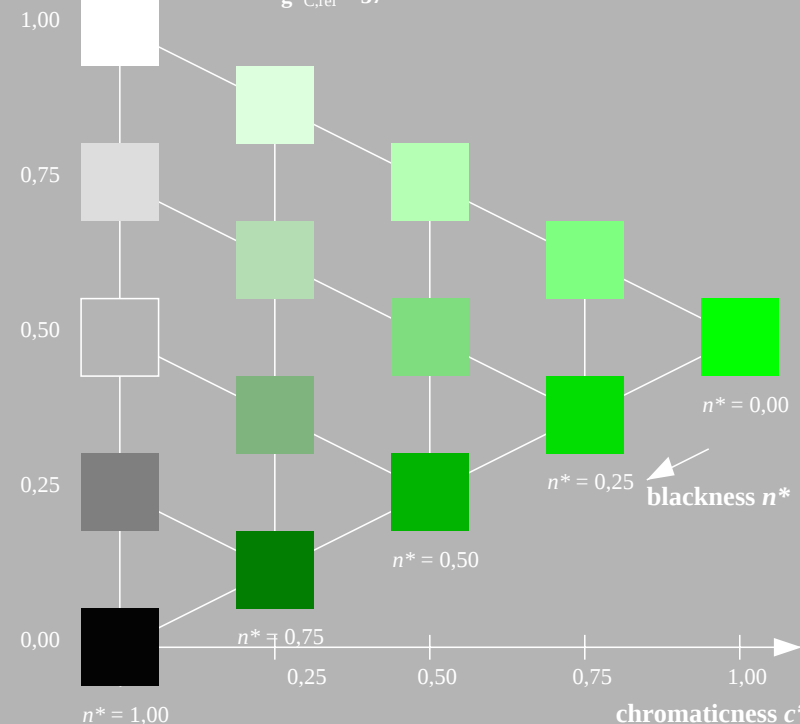
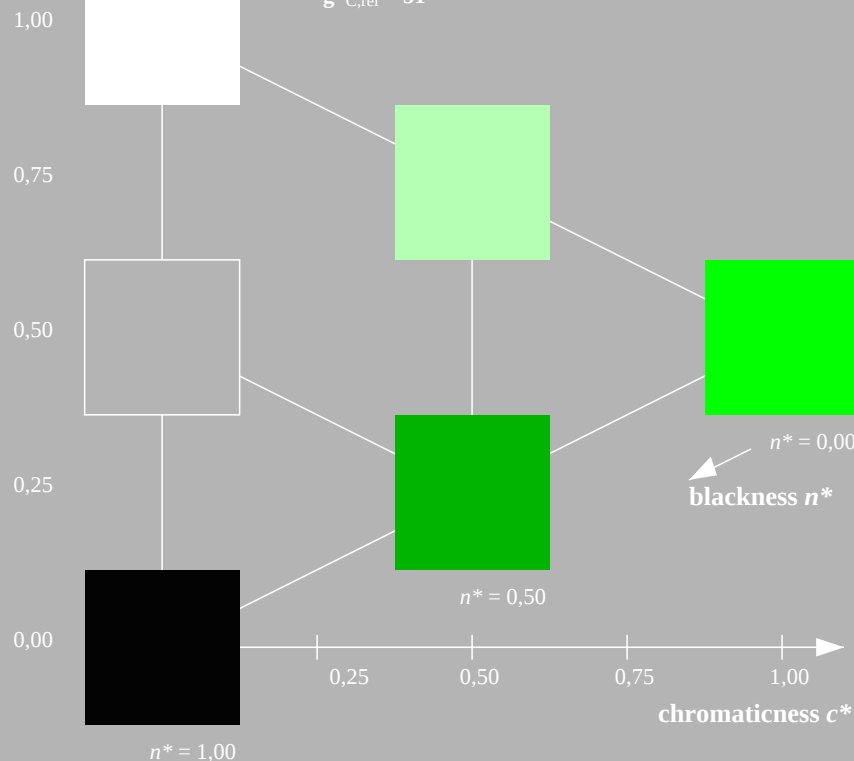
D65: hue L  
LCH\*Ma: 84 115 136  
olv\*Ma: 0.0 1.0 0.0

triangle lightness  $t^*$



%Gamut  
 $u^*_{rel} = 158$   
%Regularity  
 $g^*_{H,rel} = 20$   
 $g^*_{C,rel} = 37$

| TLS00; adapted (a) CIELAB data |         |         |              |              |     |
|--------------------------------|---------|---------|--------------|--------------|-----|
| $L^*=L^*_a$                    | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |     |
| OMa                            | 50.5    | 76.92   | 64.55        | 100.42       | 40  |
| YMa                            | 92.66   | -20.69  | 90.75        | 93.08        | 103 |
| LMa                            | 83.63   | -82.75  | 79.9         | 115.04       | 136 |
| CMa                            | 86.88   | -46.16  | -13.55       | 48.12        | 196 |
| VMa                            | 30.39   | 76.06   | -103.59      | 128.52       | 306 |
| MMa                            | 57.3    | 94.35   | -58.41       | 110.97       | 328 |
| NMa                            | 0.01    | 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 |



NE680-7, 3 step scales for constant CIELAB hue 142/360 = 0.395 (left)

5 step scales for constant CIELAB hue 136/360 = 0.378 (right)

BAM-test chart NE68; Colorimetric systems TLS70 & TLS00  
D65: 3 and 5 step colour scales for 10 hues

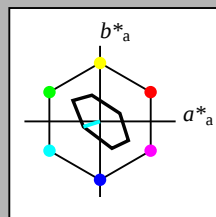
input:  $olv^* setrgbcolor$   
output:  $olv^* setrgbcolor / w^* setgray$

### Input: Colorimetric Television Luminous System TLS70

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

D65: hue C  
LCH\*Ma: 91 23 198  
olv\*Ma: 0.0 1.0 1.0

triangle lightness  $t^*$



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

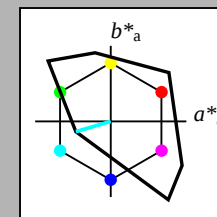
| TLS70; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| OMa                            | 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          |

### Output: Colorimetric Television Luminous System TLS00

for hue  $h^* = lab^*h = 196/360 = 0.545$   
 $lab^*ich$  and  $lab^*nch$

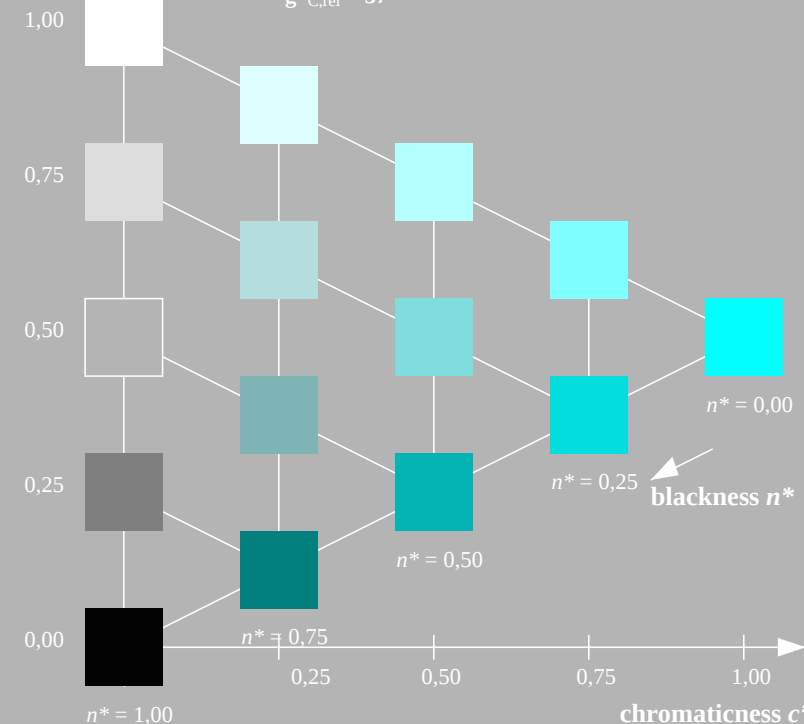
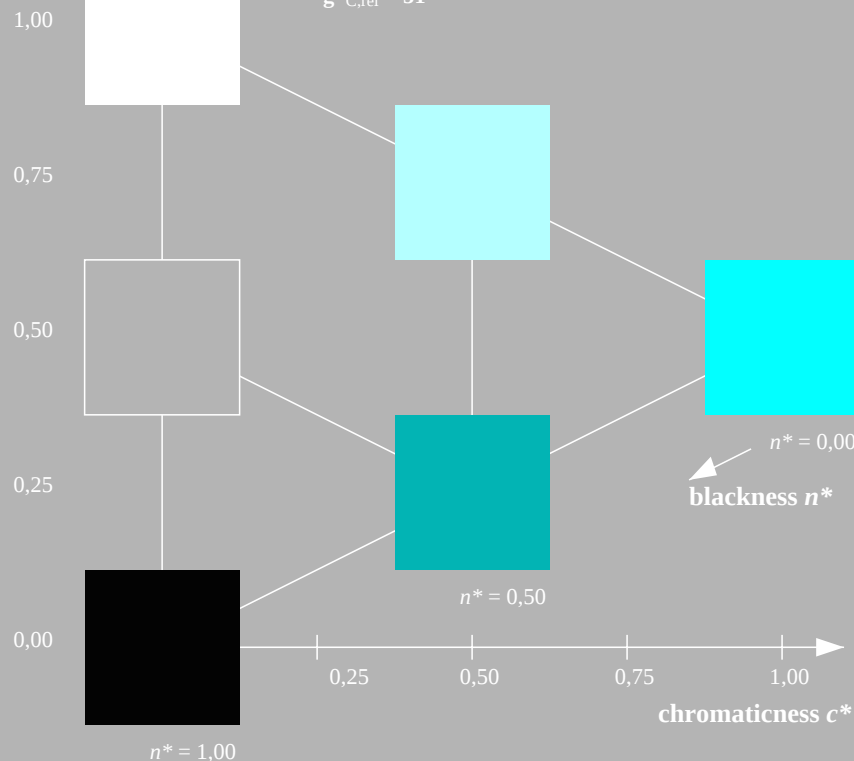
D65: hue C  
LCH\*Ma: 87 48 196  
olv\*Ma: 0.0 1.0 1.0

triangle lightness  $t^*$



%Gamut  
 $u^*_{rel} = 158$   
%Regularity  
 $g^*_{H,rel} = 20$   
 $g^*_{C,rel} = 37$

| TLS00; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| OMa                            | 50.5        | 76.92   | 64.55   | 100.42       | 40           |
| YMa                            | 92.66       | -20.69  | 90.75   | 93.08        | 103          |
| LMa                            | 83.63       | -82.75  | 79.9    | 115.04       | 136          |
| CMa                            | 86.88       | -46.16  | -13.55  | 48.12        | 196          |
| VMa                            | 30.39       | 76.06   | -103.59 | 128.52       | 306          |
| MMa                            | 57.3        | 94.35   | -58.41  | 110.97       | 328          |
| NMa                            | 0.01        | 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          |



NE680-7, 3 step scales for constant CIELAB hue 198/360 = 0.55 (left)

5 step scales for constant CIELAB hue 196/360 = 0.545 (right)

BAM-test chart NE68; Colorimetric systems TLS70 & TLS00  
D65: 3 and 5 step colour scales for 10 hues

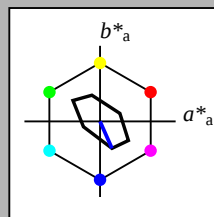
input:  $olv^* setrgbcolor$   
output:  $olv^* setrgbcolor / w^* setgray$

### Input: Colorimetric Television Luminous System TLS70

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

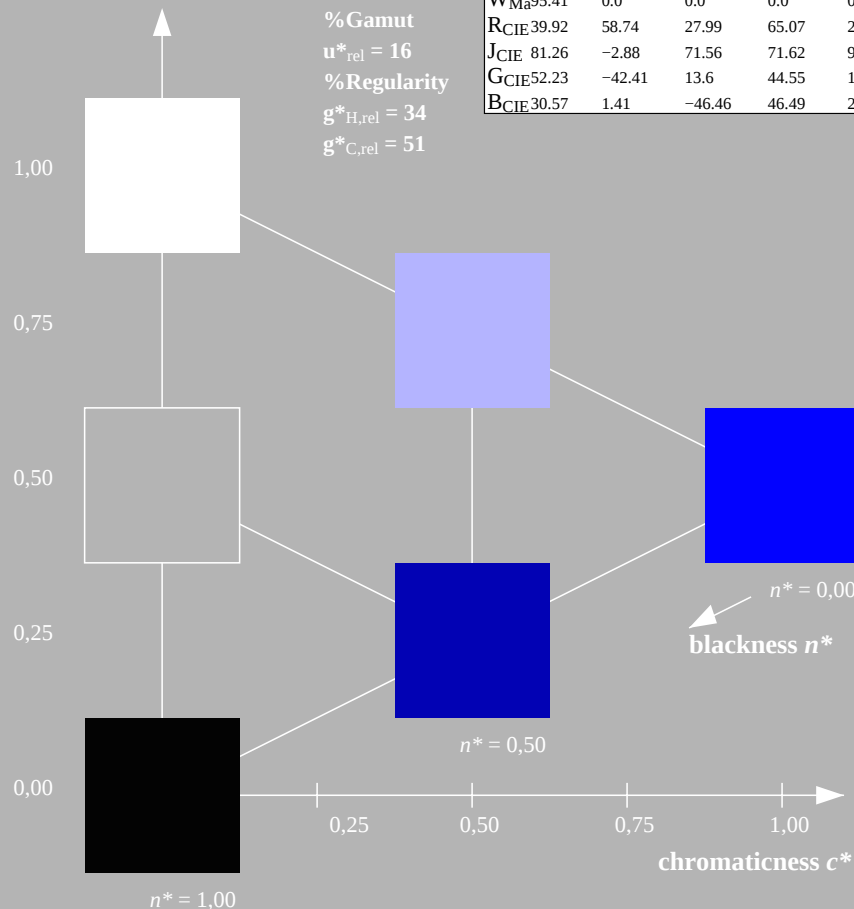
D65: hue V  
LCH\*Ma: 72 39 294  
olv\*Ma: 0.0 0.0 1.0

triangle lightness  $t^*$



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

| 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          |



NE680-7, 3 step scales for constant CIELAB hue 294/360 = 0.816 (left)



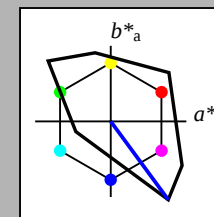
BAM-test chart NE68; Colorimetric systems TLS70 & TLS00  
D65: 3 and 5 step colour scales for 10 hues

### Output: Colorimetric Television Luminous System TLS00

for hue  $h^* = lab^*h = 306/360 = 0.851$   
 $lab^*ich$  and  $lab^*nch$

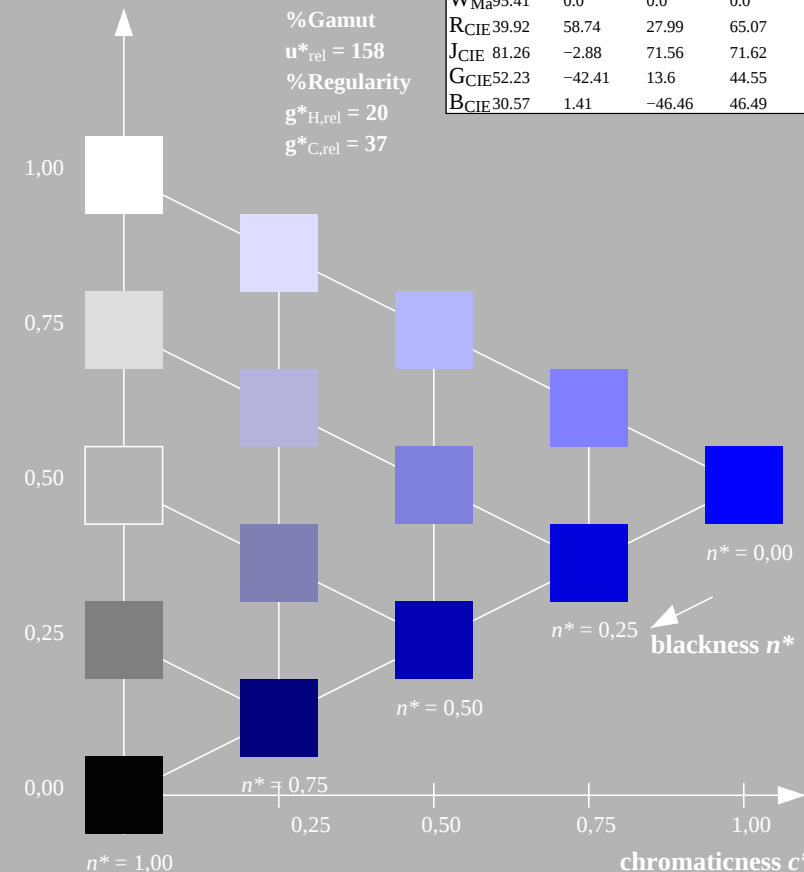
D65: hue V  
LCH\*Ma: 30 129 306  
olv\*Ma: 0.0 0.0 1.0

triangle lightness  $t^*$



%Gamut  
 $u^*_{rel} = 158$   
%Regularity  
 $g^*_{H,rel} = 20$   
 $g^*_{C,rel} = 37$

| TLS00; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| O <sub>Ma</sub>                | 50.5        | 76.92   | 64.55   | 100.42       | 40           |
| Y <sub>Ma</sub>                | 92.66       | -20.69  | 90.75   | 93.08        | 103          |
| L <sub>Ma</sub>                | 83.63       | -82.75  | 79.9    | 115.04       | 136          |
| C <sub>Ma</sub>                | 86.88       | -46.16  | -13.55  | 48.12        | 196          |
| V <sub>Ma</sub>                | 30.39       | 76.06   | -103.59 | 128.52       | 306          |
| M <sub>Ma</sub>                | 57.3        | 94.35   | -58.41  | 110.97       | 328          |
| N <sub>Ma</sub>                | 0.01        | 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          |



5 step scales for constant CIELAB hue 306/360 = 0.851 (right)

input:  $olv^* setrgbcolor$   
output:  $olv^* setrgbcolor / w^* setgray$

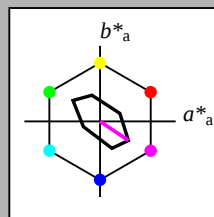


### Input: Colorimetric Television Luminous System TLS70

for hue  $h^* = \text{lab}^*h = 326/360 = 0.906$   
 $\text{lab}^*ich$  and  $\text{lab}^*nch$

D65: hue M  
LCH\*Ma: 79 45 326  
olv\*Ma: 1.0 0.0 1.0

triangle lightness  $t^*$



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

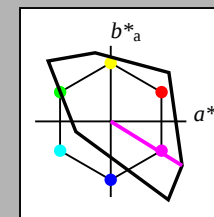
| TLS70; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| OMa                            | 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          |

### Output: Colorimetric Television Luminous System TLS00

for hue  $h^* = \text{lab}^*h = 328/360 = 0.912$   
 $\text{lab}^*ich$  and  $\text{lab}^*nch$

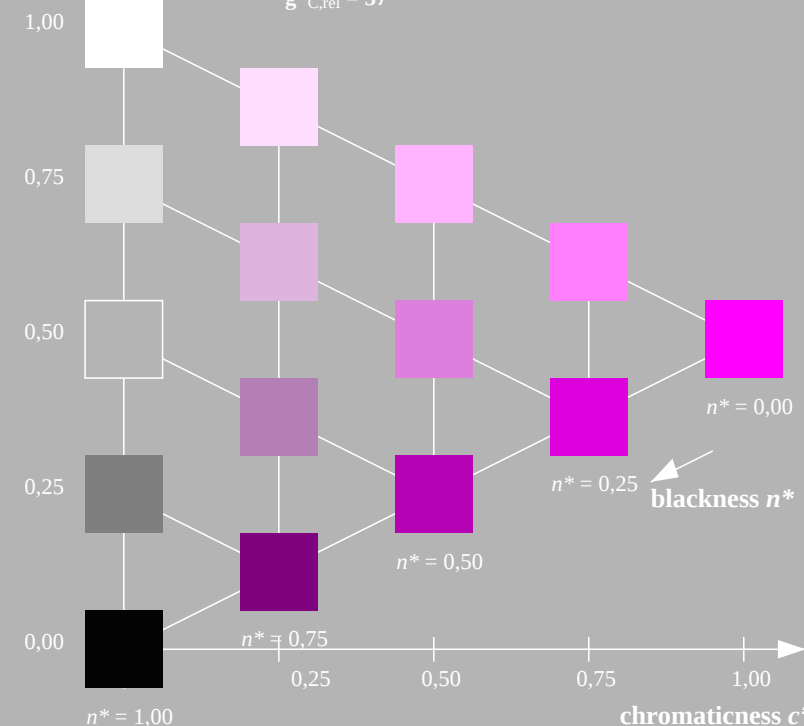
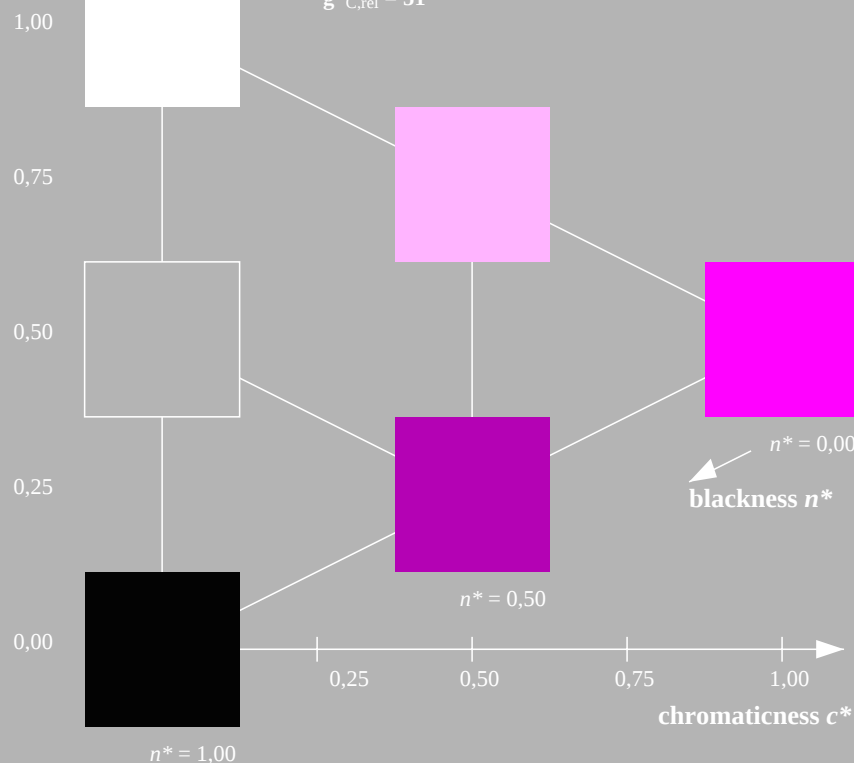
D65: hue M  
LCH\*Ma: 57 111 328  
olv\*Ma: 1.0 0.0 1.0

triangle lightness  $t^*$



%Gamut  
 $u^*_{\text{rel}} = 158$   
%Regularity  
 $g^*_{H,\text{rel}} = 20$   
 $g^*_{C,\text{rel}} = 37$

| TLS00; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| OMa                            | 50.5        | 76.92   | 64.55   | 100.42       | 40           |
| YMa                            | 92.66       | -20.69  | 90.75   | 93.08        | 103          |
| LMa                            | 83.63       | -82.75  | 79.9    | 115.04       | 136          |
| CMa                            | 86.88       | -46.16  | -13.55  | 48.12        | 196          |
| VMa                            | 30.39       | 76.06   | -103.59 | 128.52       | 306          |
| MMa                            | 57.3        | 94.35   | -58.41  | 110.97       | 328          |
| NMa                            | 0.01        | 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          |



NE680-7, 3 step scales for constant CIE LAB hue 326/360 = 0.906 (left)

5 step scales for constant CIE LAB hue 328/360 = 0.912 (right)

BAM-test chart NE68; Colorimetric systems TLS70 & TLS00  
D65: 3 and 5 step colour scales for 10 hues

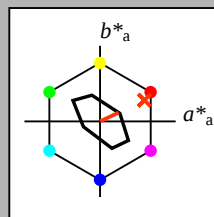
input:  $\text{olv}^* \text{setrgbcolor}$   
output:  $\text{olv}^* \text{setrgbcolor} / w^* \text{setgray}$

### Input: Colorimetric Television Luminous System TLS70

for hue  $h^* = \text{lab}^*h = 25/360 = 0.071$   
 $\text{lab}^*ich$  and  $\text{lab}^*nch$

D65: hue R  
LCH\*Ma: 77 27 25  
olv\*Ma: 1.0 0.05 0.0

triangle lightness  $t^*$



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

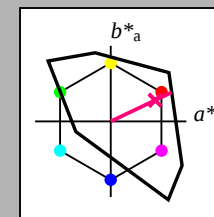
| TLS70; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| O <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          |

### Output: Colorimetric Television Luminous System TLS00

for hue  $h^* = \text{lab}^*h = 25/360 = 0.071$   
 $\text{lab}^*ich$  and  $\text{lab}^*nch$

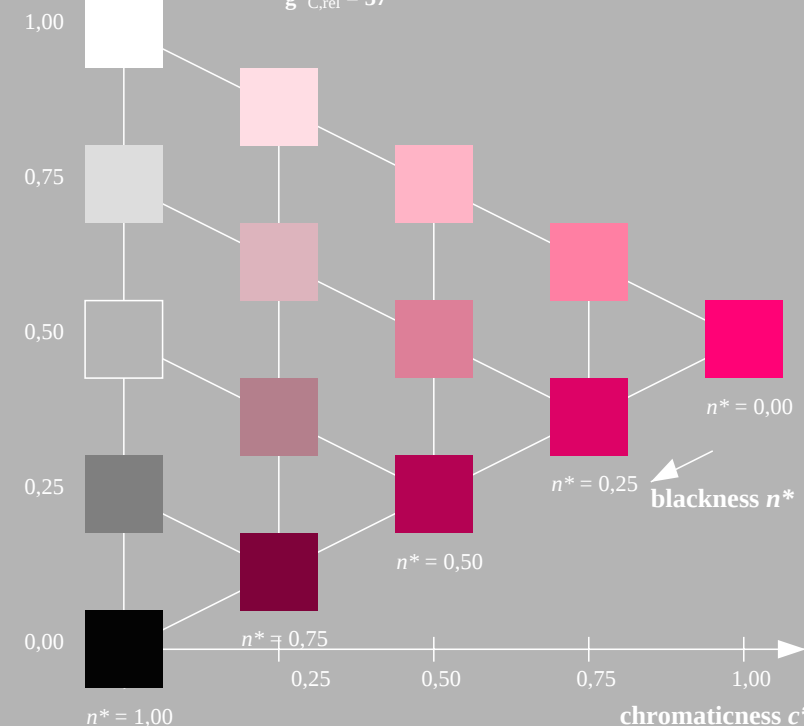
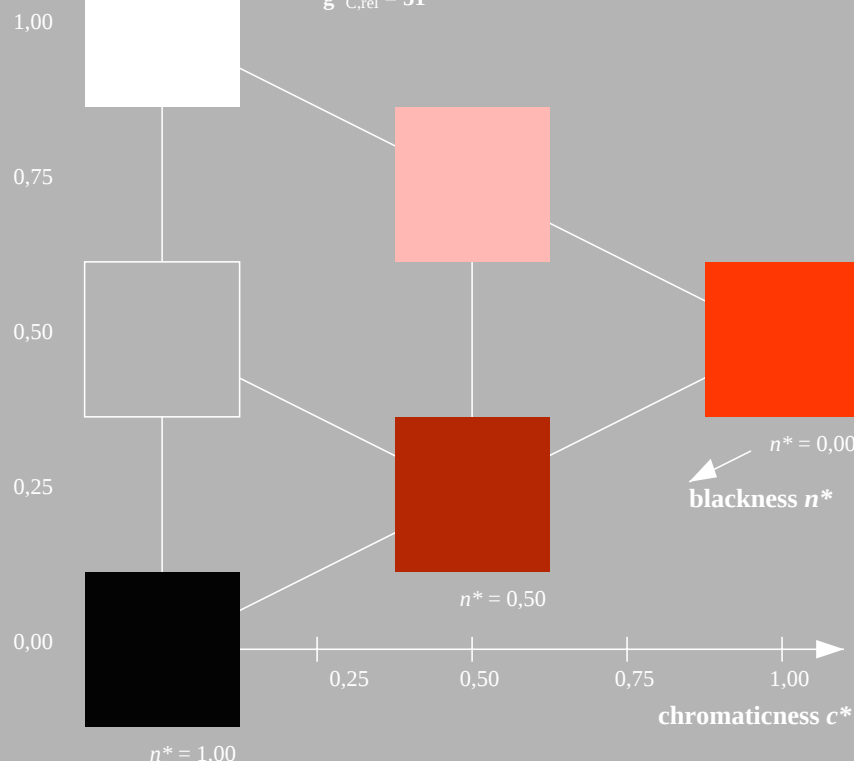
D65: hue R  
LCH\*Ma: 52 89 25  
olv\*Ma: 1.0 0.0 0.21

triangle lightness  $t^*$



%Gamut  
 $u^*_{\text{rel}} = 158$   
%Regularity  
 $g^*_{H,\text{rel}} = 20$   
 $g^*_{C,\text{rel}} = 37$

| TLS00; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| O <sub>Ma</sub>                | 50.5        | 76.92   | 64.55   | 100.42       | 40           |
| Y <sub>Ma</sub>                | 92.66       | -20.69  | 90.75   | 93.08        | 103          |
| L <sub>Ma</sub>                | 83.63       | -82.75  | 79.9    | 115.04       | 136          |
| C <sub>Ma</sub>                | 86.88       | -46.16  | -13.55  | 48.12        | 196          |
| V <sub>Ma</sub>                | 30.39       | 76.06   | -103.59 | 128.52       | 306          |
| M <sub>Ma</sub>                | 57.3        | 94.35   | -58.41  | 110.97       | 328          |
| N <sub>Ma</sub>                | 0.01        | 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          |



NE680-7, 3 step scales for constant CIELAB hue 25/360 = 0.071 (left)

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

BAM-test chart NE68; Colorimetric systems TLS70 & TLS00  
D65: 3 and 5 step colour scales for 10 hues

input:  $\text{olv}^* \text{setrgbcolor}$   
output:  $\text{olv}^* \text{setrgbcolor} / w^* \text{setgray}$

### Input: Colorimetric Television Luminous System TLS70

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

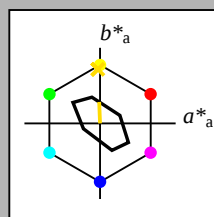
$lab^*ich$  and  $lab^*nch$

D65: hue J

LCH\*Ma: 89 28 92

olv\*Ma: 1.0 0.74 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 16$

%Regularity

$g^*_{H,rel} = 34$

$g^*_{C,rel} = 51$

### 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          |

### Output: Colorimetric Television Luminous System TLS00

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

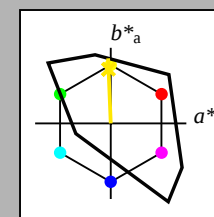
$lab^*ich$  and  $lab^*nch$

D65: hue J

LCH\*Ma: 85 86 92

olv\*Ma: 1.0 0.82 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 158$

%Regularity

$g^*_{H,rel} = 20$

$g^*_{C,rel} = 37$

### TLS00; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O <sub>Ma</sub>  | 50.5        | 76.92   | 64.55   | 100.42       | 40           |
| Y <sub>Ma</sub>  | 92.66       | -20.69  | 90.75   | 93.08        | 103          |
| L <sub>Ma</sub>  | 83.63       | -82.75  | 79.9    | 115.04       | 136          |
| C <sub>Ma</sub>  | 86.88       | -46.16  | -13.55  | 48.12        | 196          |
| V <sub>Ma</sub>  | 30.39       | 76.06   | -103.59 | 128.52       | 306          |
| M <sub>Ma</sub>  | 57.3        | 94.35   | -58.41  | 110.97       | 328          |
| N <sub>Ma</sub>  | 0.01        | 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          |

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

$n^* = 0,50$

$n^* = 0,00$   
blackness  $n^*$

chromaticness  $c^*$

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

$n^* = 0,75$

$n^* = 0,50$

$n^* = 0,25$

$n^* = 0,00$

blackness  $n^*$

chromaticness  $c^*$

NE680-7, 3 step scales for constant CIELAB hue 92/360 = 0.256 (left)

5 step scales for constant CIELAB hue 92/360 = 0.256 (right)

BAM-test chart NE68; Colorimetric systems TLS70 & TLS00

D65: 3 and 5 step colour scales for 10 hues

input:  $olv^* setrgbcolor$

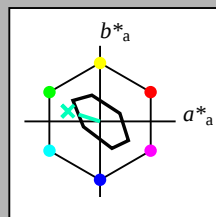
output:  $olv^* setrgbcolor / w^* setgray$

### Input: Colorimetric Television Luminous System TLS70

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

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

triangle lightness  $t^*$



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

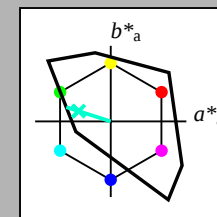
| TLS70; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| O <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          |

### Output: Colorimetric Television Luminous System TLS00

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

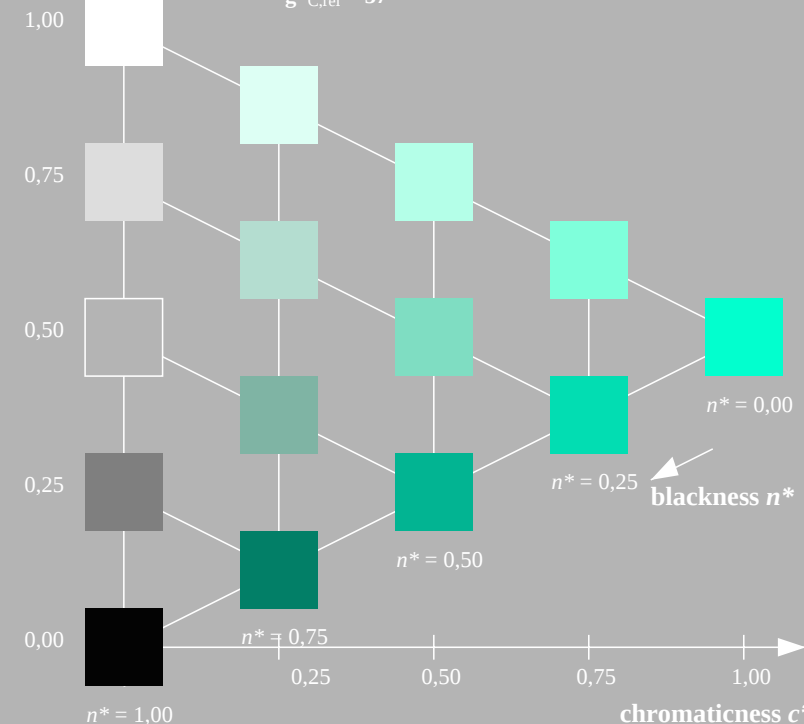
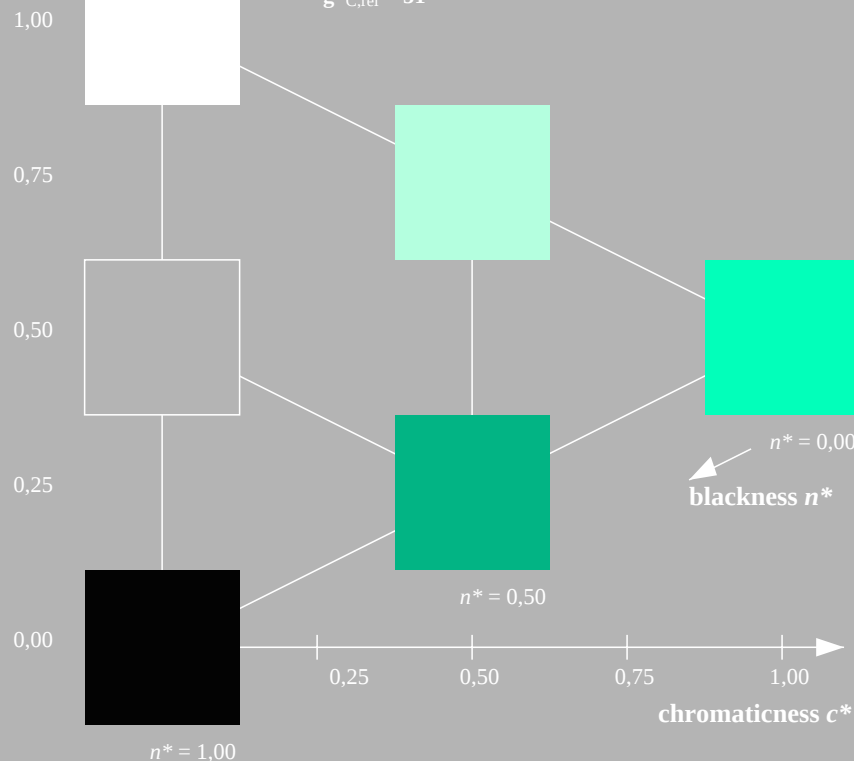
D65: hue G  
LCH\*Ma: 86 62 162  
olv\*Ma: 0.0 1.0 0.65

triangle lightness  $t^*$



%Gamut  
 $u^*_{rel} = 158$   
%Regularity  
 $g^*_{H,rel} = 20$   
 $g^*_{C,rel} = 37$

| TLS00; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| O <sub>Ma</sub>                | 50.5        | 76.92   | 64.55   | 100.42       | 40           |
| Y <sub>Ma</sub>                | 92.66       | -20.69  | 90.75   | 93.08        | 103          |
| L <sub>Ma</sub>                | 83.63       | -82.75  | 79.9    | 115.04       | 136          |
| C <sub>Ma</sub>                | 86.88       | -46.16  | -13.55  | 48.12        | 196          |
| V <sub>Ma</sub>                | 30.39       | 76.06   | -103.59 | 128.52       | 306          |
| M <sub>Ma</sub>                | 57.3        | 94.35   | -58.41  | 110.97       | 328          |
| N <sub>Ma</sub>                | 0.01        | 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          |



NE680-7, 3 step scales for constant CIELAB hue 162/360 = 0.451 (left)

5 step scales for constant CIELAB hue 162/360 = 0.451 (right)

BAM-test chart NE68; Colorimetric systems TLS70 & TLS00  
D65: 3 and 5 step colour scales for 10 hues

input:  $olv^* setrgbcolor$   
output:  $olv^* setrgbcolor / w^* setgray$

### Input: Colorimetric Television Luminous System TLS70

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

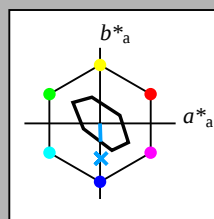
$lab^*ich$  and  $lab^*nch$

D65: hue B

LCH\*Ma: 80 24 272

olv\*Ma: 0.0 0.4 1.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 16$

%Regularity

$g^*_{H,rel} = 34$

$g^*_{C,rel} = 51$

### 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          |

### Output: Colorimetric Television Luminous System TLS00

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

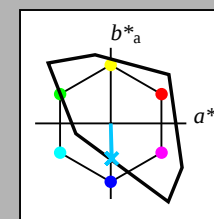
$lab^*ich$  and  $lab^*nch$

D65: hue B

LCH\*Ma: 65 49 272

olv\*Ma: 0.0 0.61 1.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 158$

%Regularity

$g^*_{H,rel} = 20$

$g^*_{C,rel} = 37$

### TLS00; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O <sub>Ma</sub>  | 50.5        | 76.92   | 64.55   | 100.42       | 40           |
| Y <sub>Ma</sub>  | 92.66       | -20.69  | 90.75   | 93.08        | 103          |
| L <sub>Ma</sub>  | 83.63       | -82.75  | 79.9    | 115.04       | 136          |
| C <sub>Ma</sub>  | 86.88       | -46.16  | -13.55  | 48.12        | 196          |
| V <sub>Ma</sub>  | 30.39       | 76.06   | -103.59 | 128.52       | 306          |
| M <sub>Ma</sub>  | 57.3        | 94.35   | -58.41  | 110.97       | 328          |
| N <sub>Ma</sub>  | 0.01        | 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          |

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

$n^* = 0,50$

blackness  $n^*$

$n^* = 0,00$

$n^* = 0,50$

chromaticness  $c^*$

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

$n^* = 0,75$

$n^* = 0,50$

$n^* = 0,25$

$n^* = 0,00$

blackness  $n^*$

chromaticness  $c^*$

NE680-7, 3 step scales for constant CIELAB hue  $272/360 = 0.755$  (left)

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

BAM-test chart NE68; Colorimetric systems TLS70 & TLS00

D65: 3 and 5 step colour scales for 10 hues

input:  $olv^* setrgbcolor$

output:  $olv^* setrgbcolor / w^* setgray$