

Input: Colorimetric Television Luminous System TLS00

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

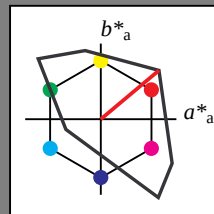
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue O

LCH\*Ma: 51 100 40

olv\*Ma: 1.0 0.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 158$

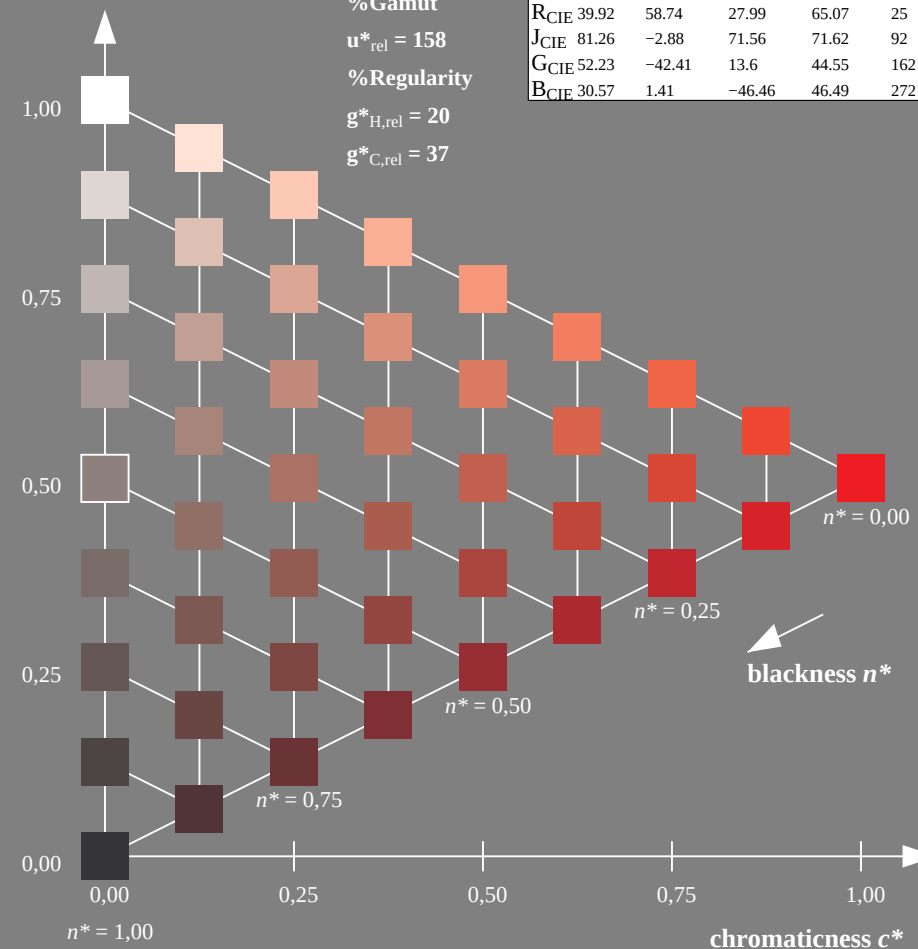
%Regularity

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

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

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          |



OE730-7, 9 step scales for constant CIELAB hue 40/360 = 0.111 (left)



BAM-test chart OE73; Colorimetric systems TLS00 & TLS70

D65: 9 and 16 step colour scales for 10 hues

Output: Colorimetric Television Luminous System TLS70

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

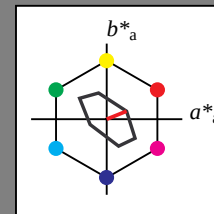
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue O

LCH\*Ma: 76 28 22

olv\*Ma: 1.0 0.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 16$

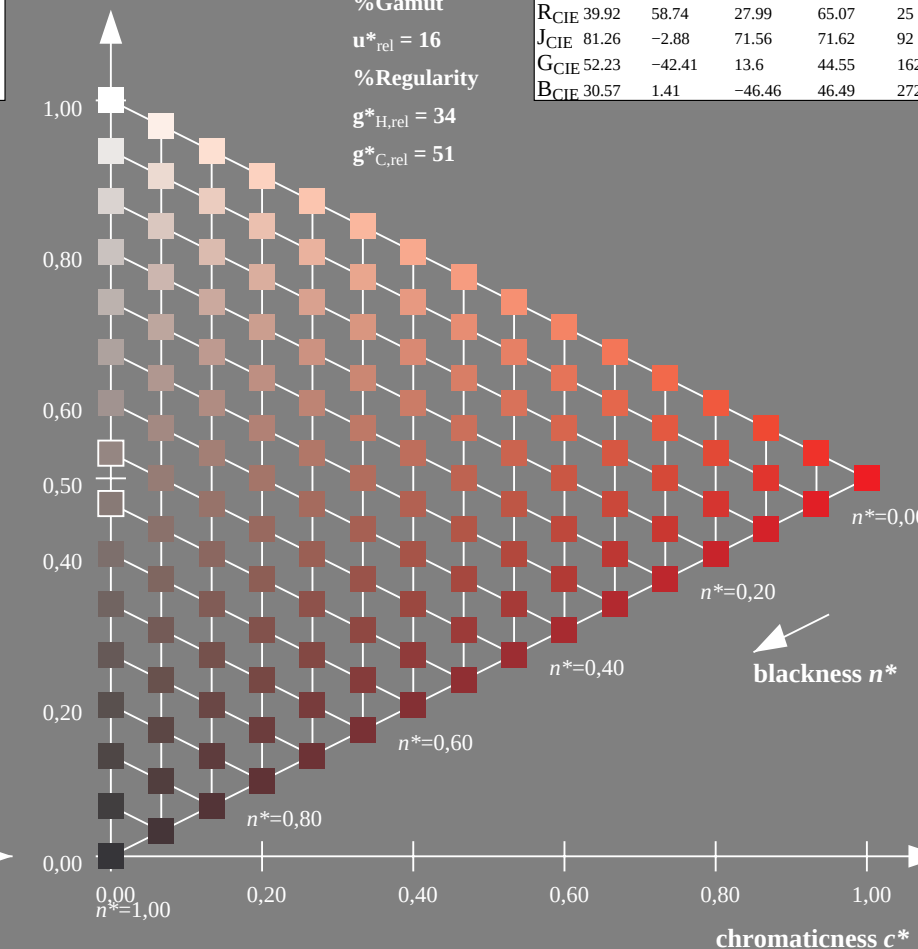
%Regularity

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

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

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          |



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

input:  $cmY0^* setcmykcolor$

output: no change compared to input



Input: Colorimetric Television Luminous System TLS00

for hue  $h^* = lab \cdot h = 103/360 = 0.286$

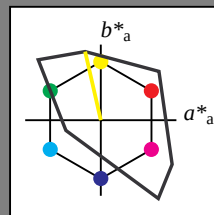
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue Y

LCH\*Ma: 93 93 103

olv\*Ma: 1.0 1.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 158$

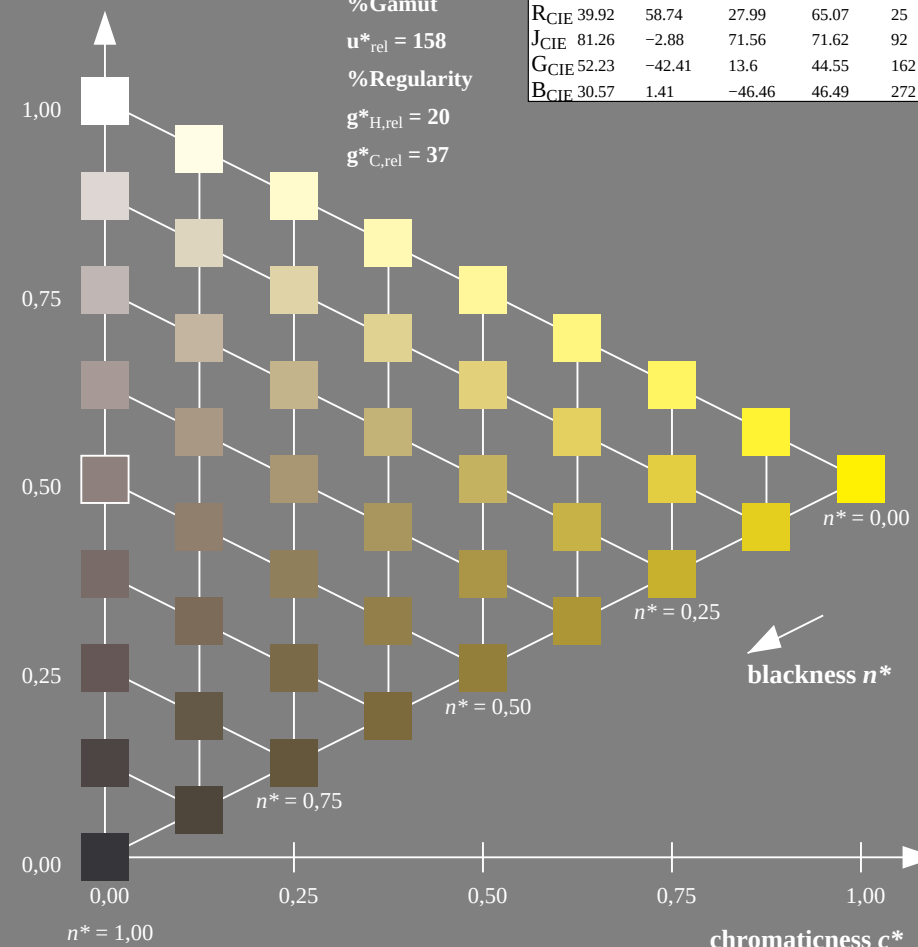
%Regularity

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

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

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          |



OE730-7, 9 step scales for constant CIELAB hue 103/360 = 0.286 (left)



BAM-test chart OE73; Colorimetric systems TLS00 & TLS70

D65: 9 and 16 step colour scales for 10 hues

Output: Colorimetric Television Luminous System TLS70

for hue  $h^* = lab \cdot h = 107/360 = 0.298$

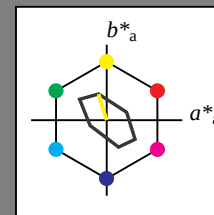
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue Y

LCH\*Ma: 94 36 107

olv\*Ma: 1.0 1.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 16$

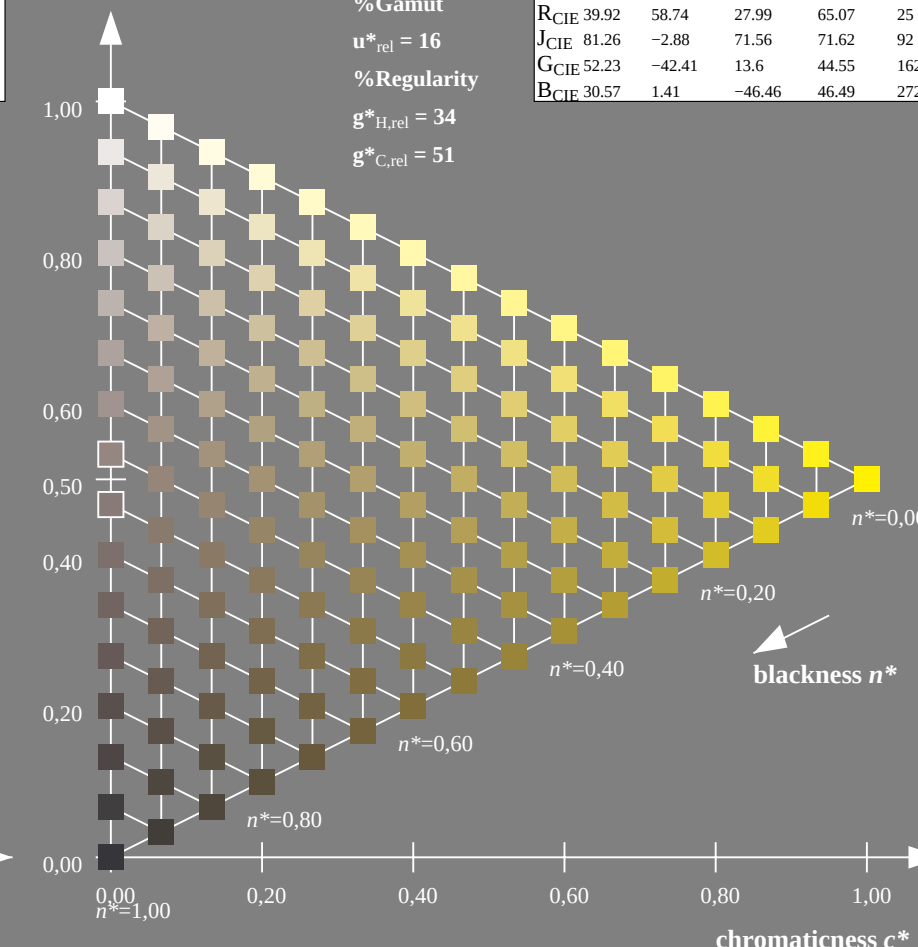
%Regularity

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

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

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          |



16 step scales for constant CIELAB hue 107/360 = 0.298 (right)

input:  $cmY0^* setcmykcolor$

output: no change compared to input



Input: Colorimetric Television Luminous System TLS00

for hue  $h^* = lab \cdot h = 136/360 = 0.378$

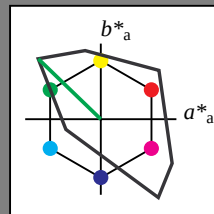
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue L

LCH\*Ma: 84 115 136

olv\*Ma: 0.0 1.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 158$

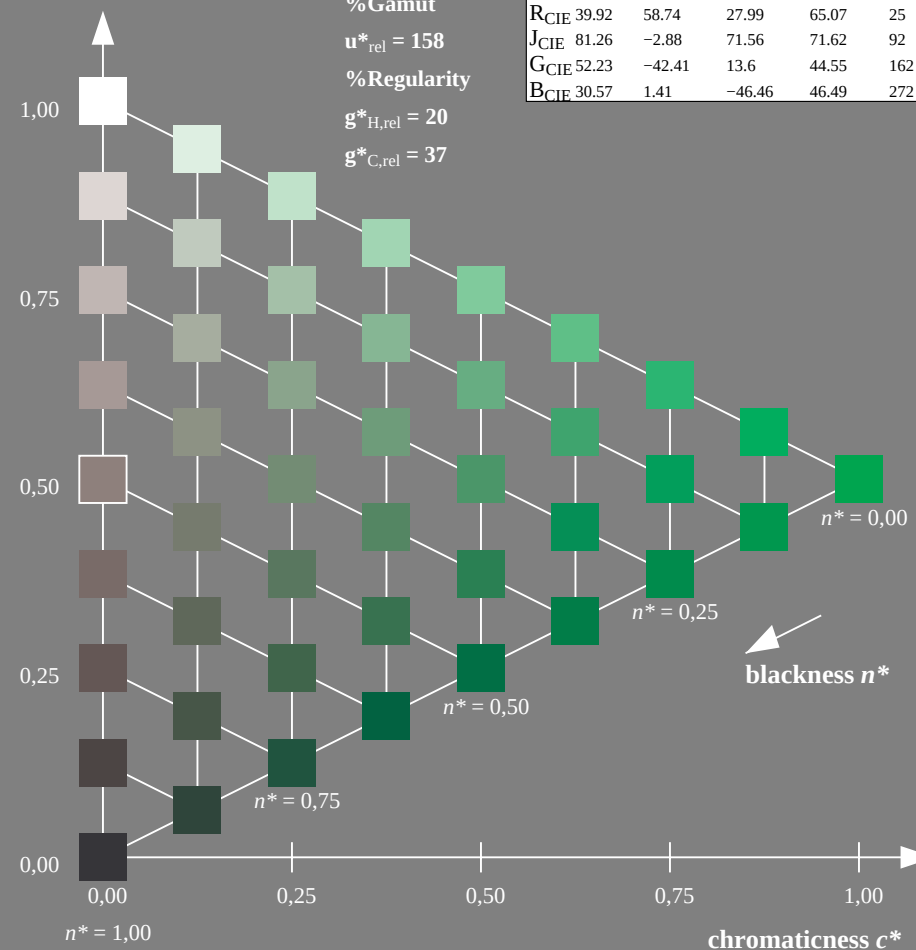
%Regularity

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

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

TLS00; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| 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          |



OE730-7, 9 step scales for constant CIELAB hue 136/360 = 0.378 (left)



BAM-test chart OE73; Colorimetric systems TLS00 & TLS70

D65: 9 and 16 step colour scales for 10 hues

Output: Colorimetric Television Luminous System TLS70

for hue  $h^* = lab \cdot h = 142/360 = 0.395$

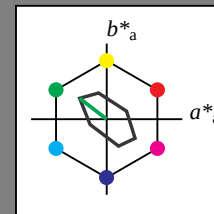
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue L

LCH\*Ma: 89 45 142

olv\*Ma: 0.0 1.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 16$

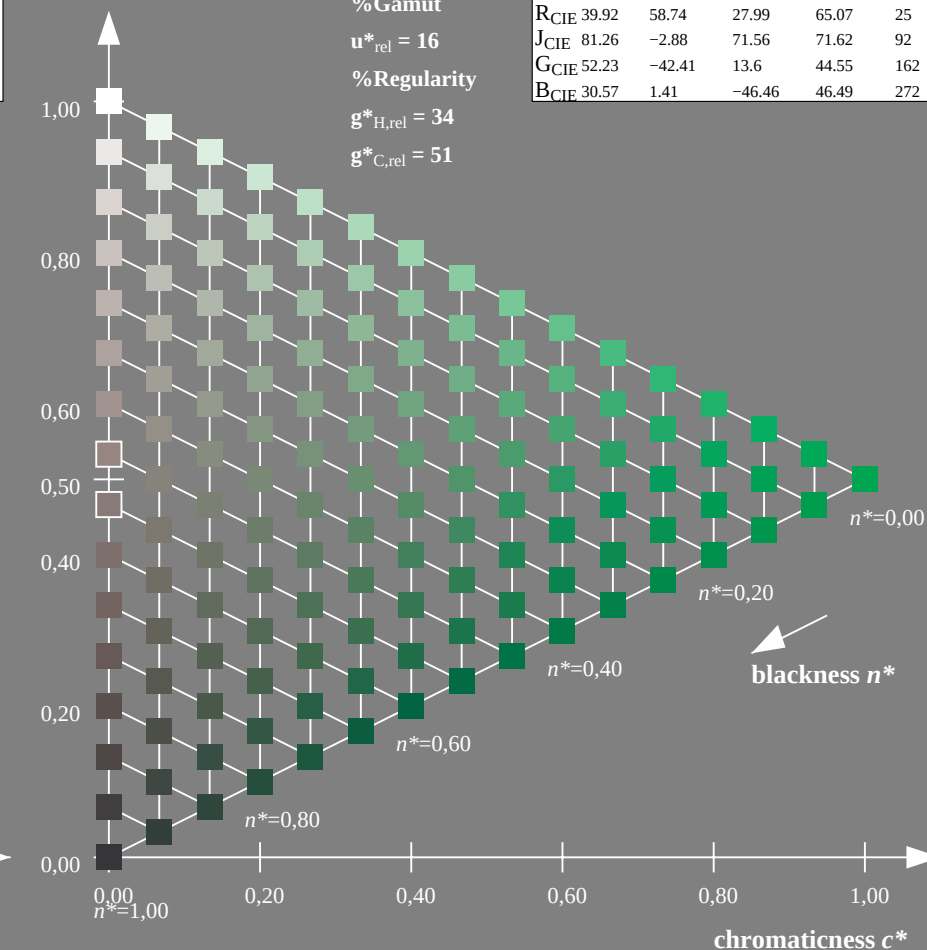
%Regularity

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

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

TLS70; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| 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          |



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

input:  $cmY0^* setcmykcolor$

output: no change compared to input



Input: Colorimetric Television Luminous System TLS00

for hue  $h^* = lab \cdot h = 196/360 = 0.545$

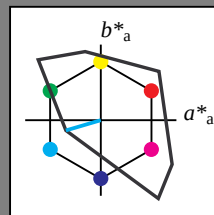
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue C

LCH\*Ma: 87 48 196

olv\*Ma: 0.0 1.0 1.0

triangle lightness  $t^*$



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          |

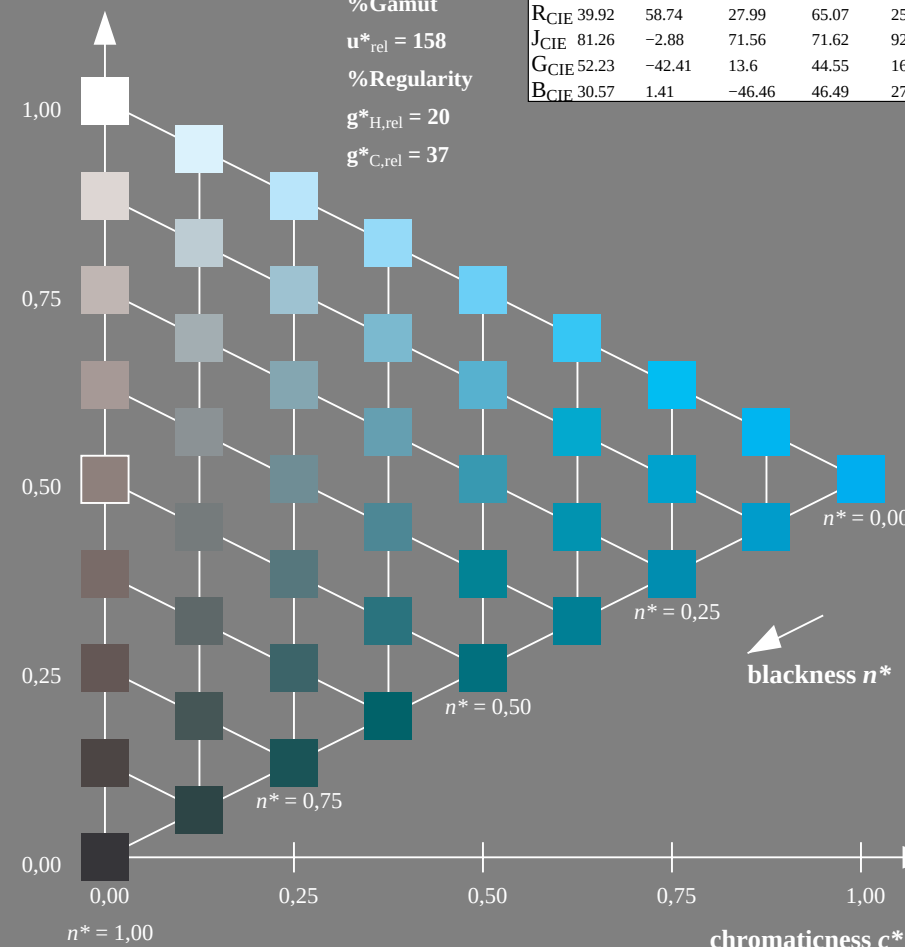
%Gamut

$u^*_{rel} = 158$

%Regularity

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

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



OE730-7, 9 step scales for constant CIELAB hue 196/360 = 0.545 (left)



BAM-test chart OE73; Colorimetric systems TLS00 & TLS70

D65: 9 and 16 step colour scales for 10 hues

Output: Colorimetric Television Luminous System TLS70

for hue  $h^* = lab \cdot h = 198/360 = 0.55$

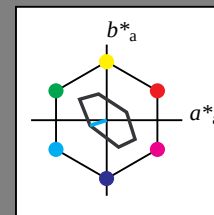
$lab \cdot tch$  and  $lab \cdot nch$

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          |

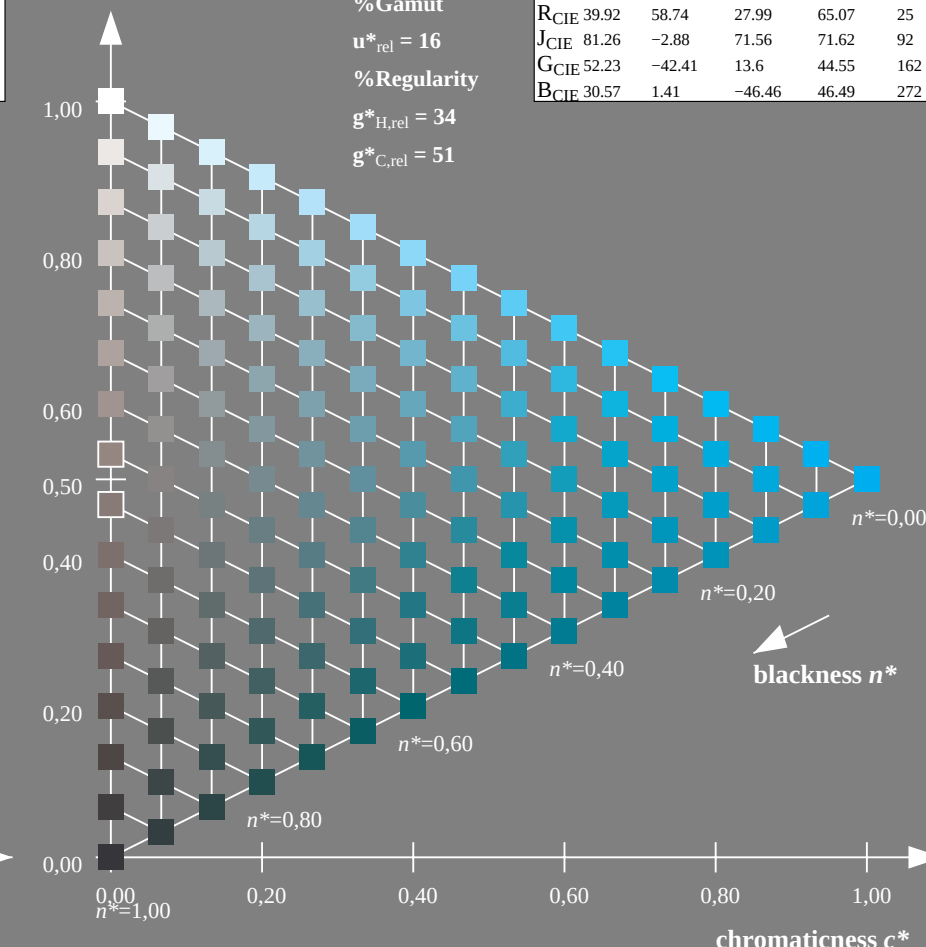
%Gamut

$u^*_{rel} = 16$

%Regularity

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

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



16 step scales for constant CIELAB hue 198/360 = 0.55 (right)

input:  $cmY0^*$  set  $cmYkcolor$

output: no change compared to input



Input: Colorimetric Television Luminous System TLS00

for hue  $h^* = lab \cdot h = 306/360 = 0.851$

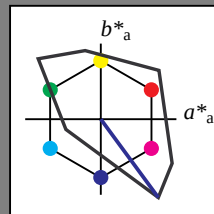
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue V

LCH\*Ma: 30 129 306

olv\*Ma: 0.0 0.0 1.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 158$

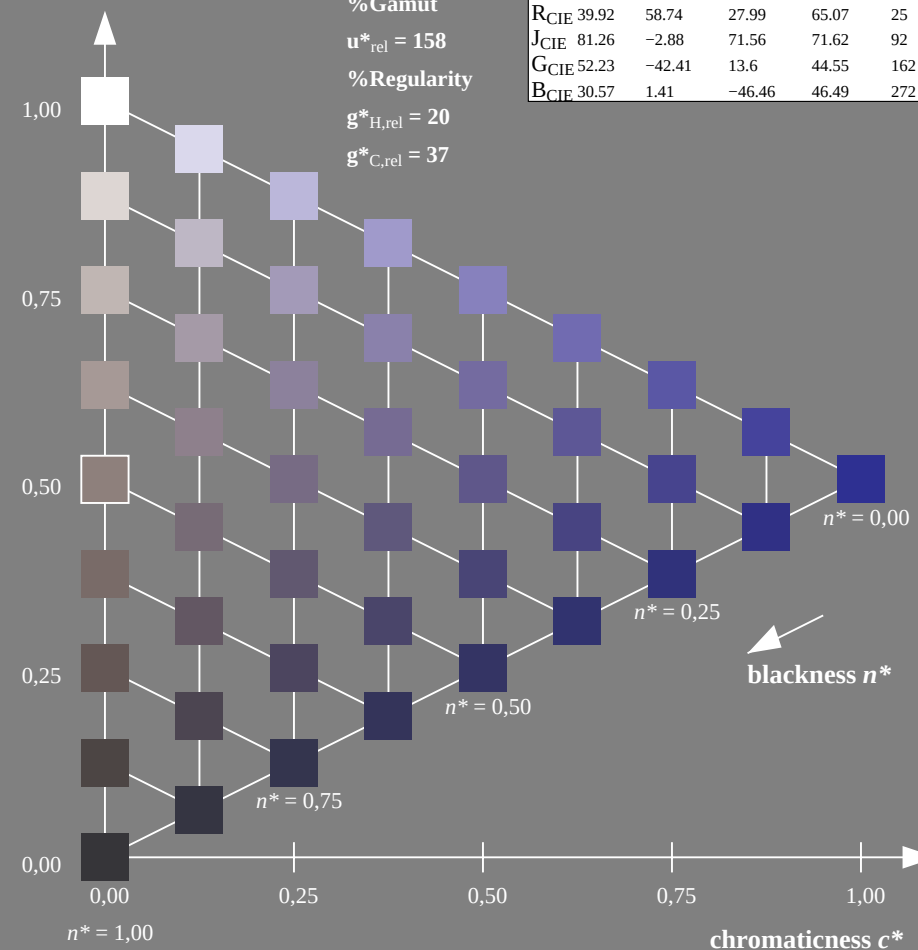
%Regularity

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

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

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          |



OE730-7, 9 step scales for constant CIELAB hue 306/360 = 0.851 (left)



BAM-test chart OE73; Colorimetric systems TLS00 & TLS70

D65: 9 and 16 step colour scales for 10 hues

Output: Colorimetric Television Luminous System TLS70

for hue  $h^* = lab \cdot h = 294/360 = 0.816$

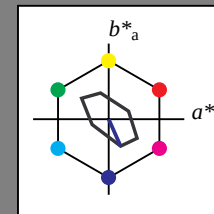
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue V

LCH\*Ma: 72 39 294

olv\*Ma: 0.0 0.0 1.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 16$

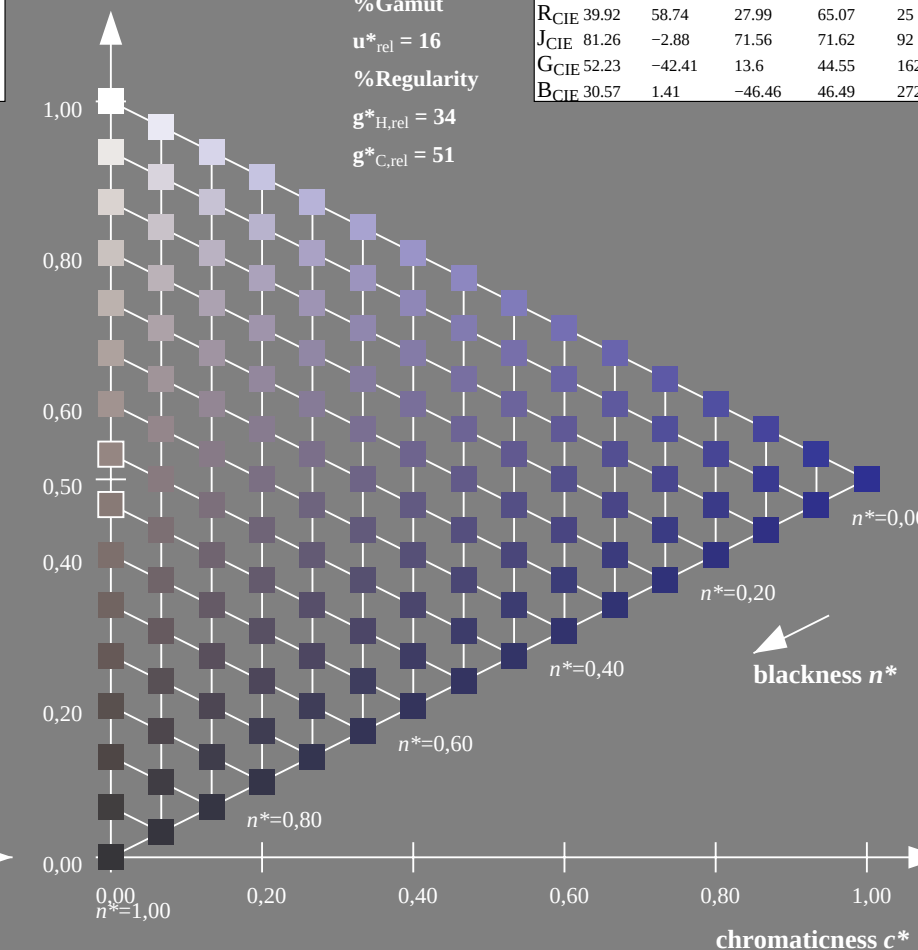
%Regularity

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

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

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          |



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

input:  $cmY0^* setcmykcolor$

output: no change compared to input



Input: Colorimetric Television Luminous System TLS00

for hue  $h^* = lab \cdot h = 328/360 = 0.912$

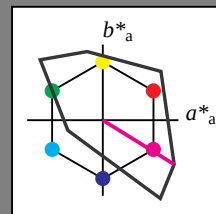
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue M

LCH\*Ma: 57 111 328

olv\*Ma: 1.0 0.0 1.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 158$

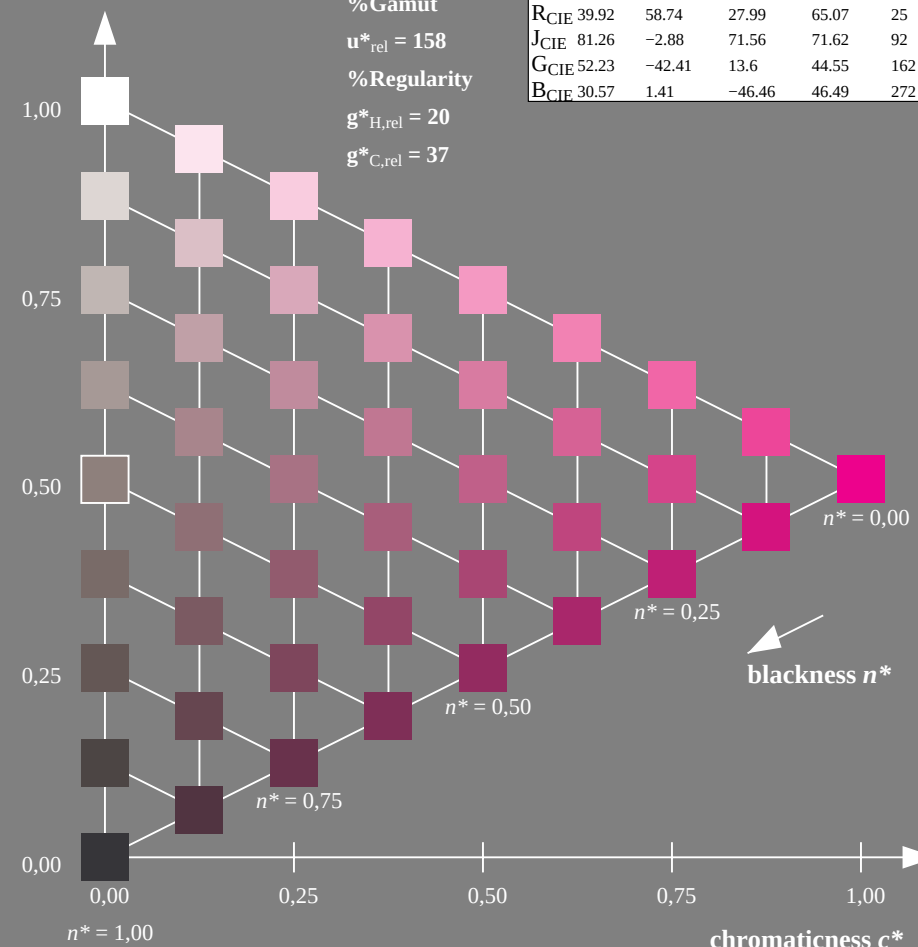
%Regularity

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

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

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          |



OE730-7, 9 step scales for constant CIELAB hue 328/360 = 0.912 (left)



BAM-test chart OE73; Colorimetric systems TLS00 & TLS70

D65: 9 and 16 step colour scales for 10 hues

Output: Colorimetric Television Luminous System TLS70

for hue  $h^* = lab \cdot h = 326/360 = 0.906$

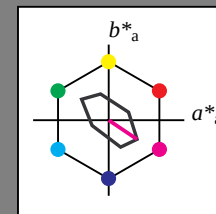
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue M

LCH\*Ma: 79 45 326

olv\*Ma: 1.0 0.0 1.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 16$

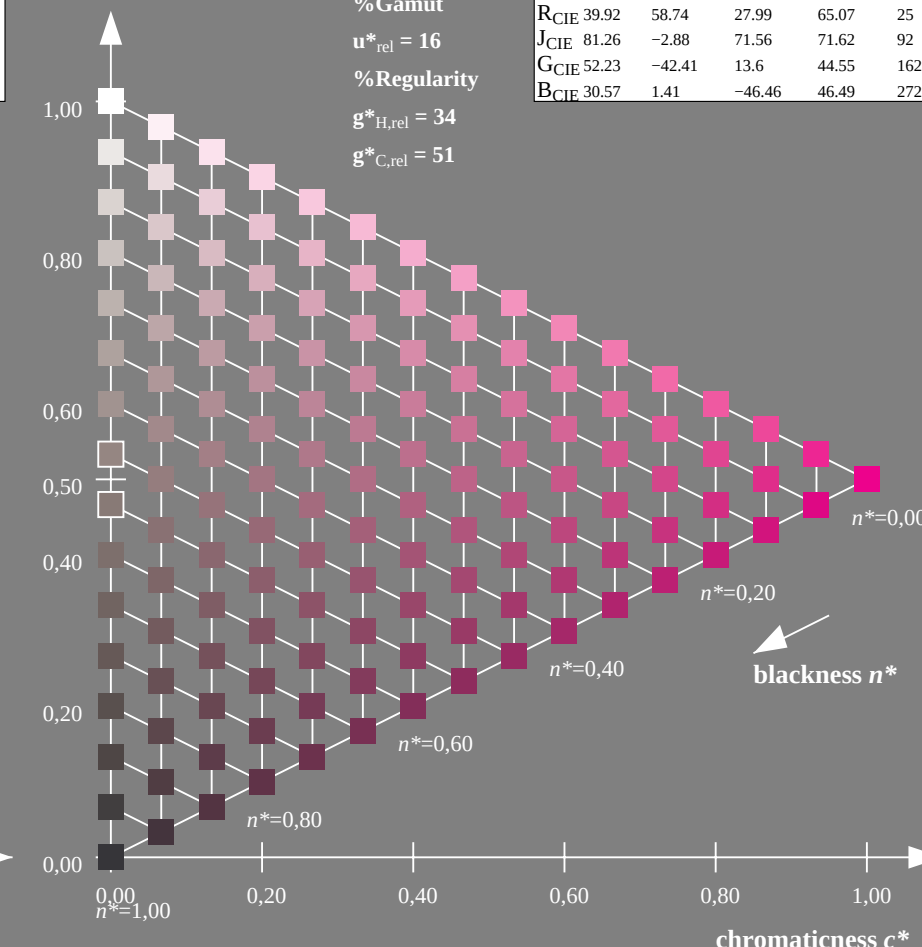
%Regularity

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

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

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          |



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

input:  $cmY0^* setcmykcolor$

output: no change compared to input



Input: Colorimetric Television Luminous System TLS00

for hue  $h^* = lab \cdot h = 25/360 = 0.071$

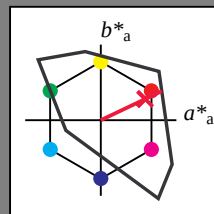
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue R

LCH\*Ma: 52 89 25

olv\*Ma: 1.0 0.0 0.21

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 158$

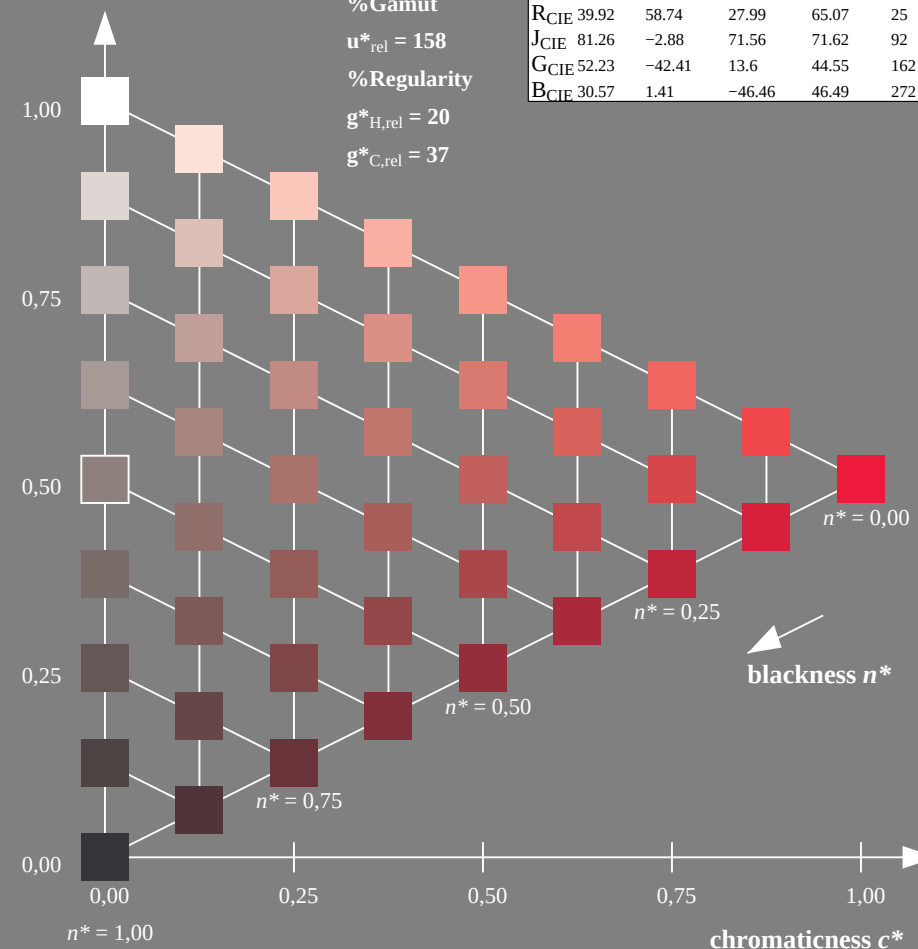
%Regularity

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

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

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          |



OE730-7, 9 step scales for constant CIELAB hue 25/360 = 0.071 (left)



BAM-test chart OE73; Colorimetric systems TLS00 & TLS70

D65: 9 and 16 step colour scales for 10 hues

Output: Colorimetric Television Luminous System TLS70

for hue  $h^* = lab \cdot h = 25/360 = 0.071$

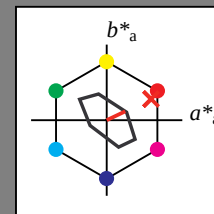
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue R

LCH\*Ma: 77 27 25

olv\*Ma: 1.0 0.05 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 16$

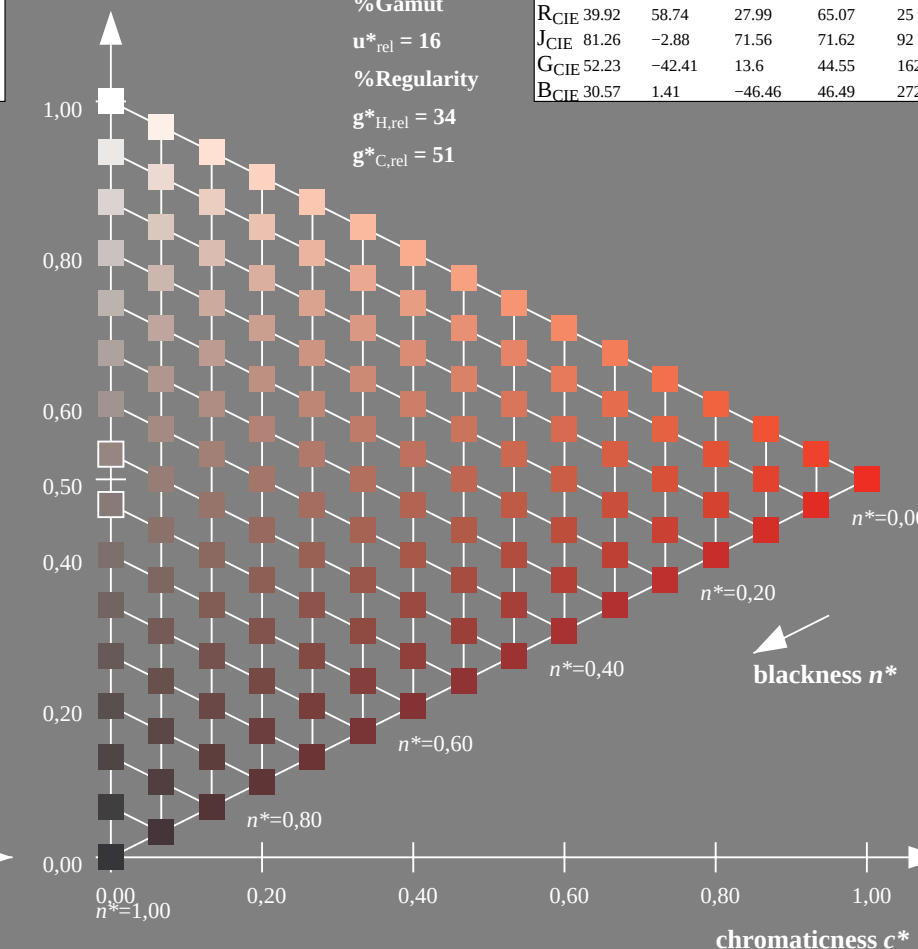
%Regularity

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

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

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          |



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

input:  $cmY0^* setcmykcolor$

output: no change compared to input





Input: Colorimetric Television Luminous System TLS00

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

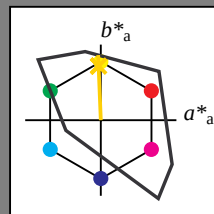
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue J

LCH\*Ma: 85 86 92

olv\*Ma: 1.0 0.82 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 158$

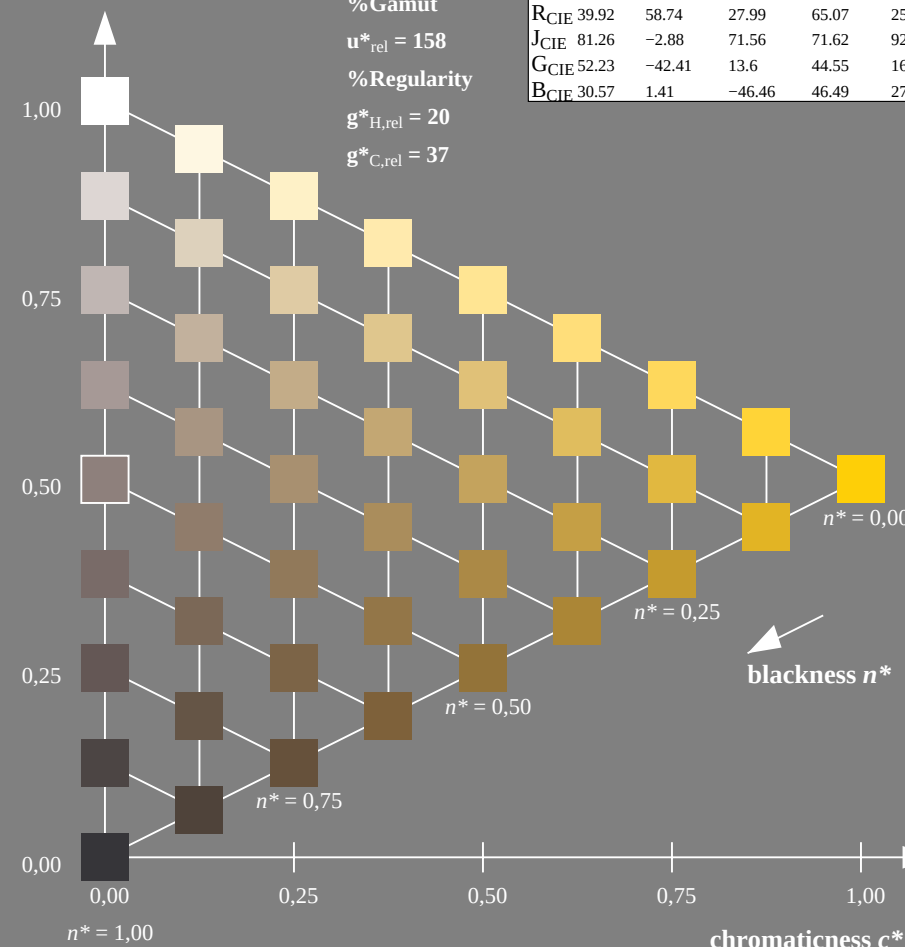
%Regularity

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

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

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          |



OE730-7, 9 step scales for constant CIELAB hue 92/360 = 0.256 (left)



BAM-test chart OE73; Colorimetric systems TLS00 & TLS70

D65: 9 and 16 step colour scales for 10 hues

Output: Colorimetric Television Luminous System TLS70

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

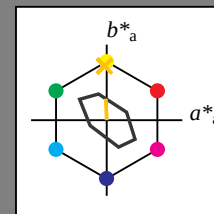
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue J

LCH\*Ma: 89 28 92

olv\*Ma: 1.0 0.74 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 16$

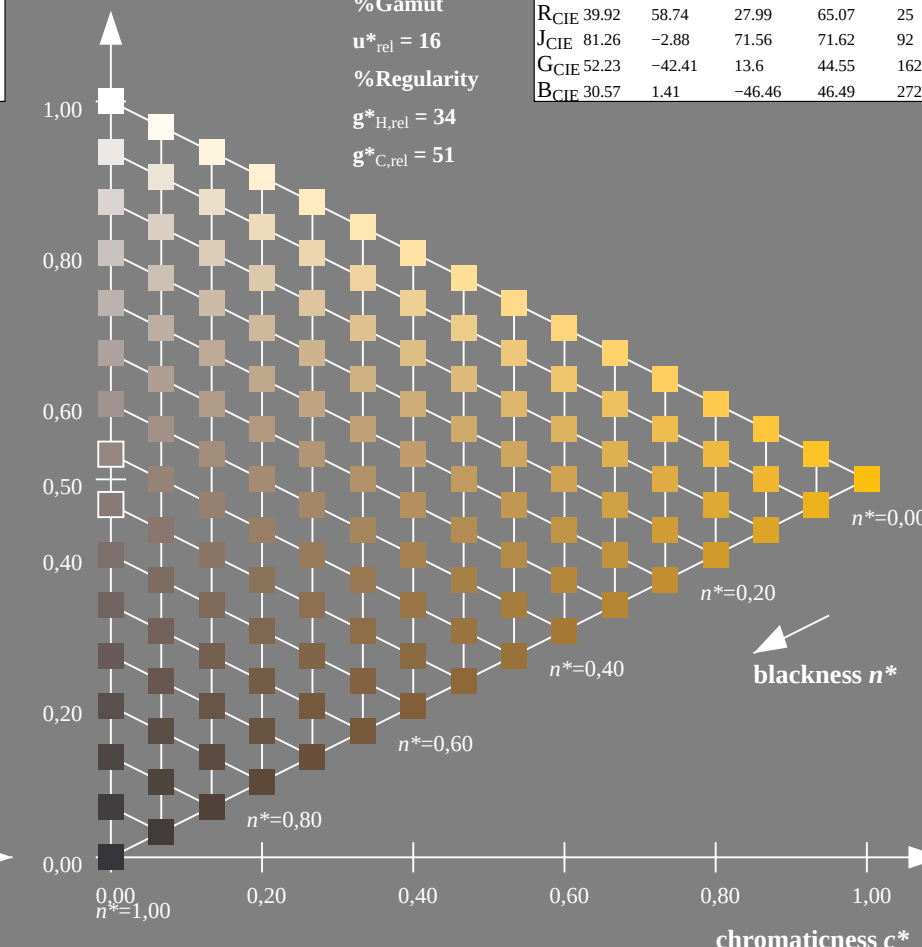
%Regularity

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

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

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          |



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

input:  $cmY0^* setcmykcolor$

output: no change compared to input





Input: Colorimetric Television Luminous System TLS00

for hue  $h^* = lab \cdot h = 162/360 = 0.451$

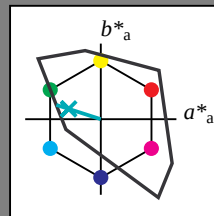
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue G

LCH\*Ma: 86 62 162

olv\*Ma: 0.0 1.0 0.65

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 158$

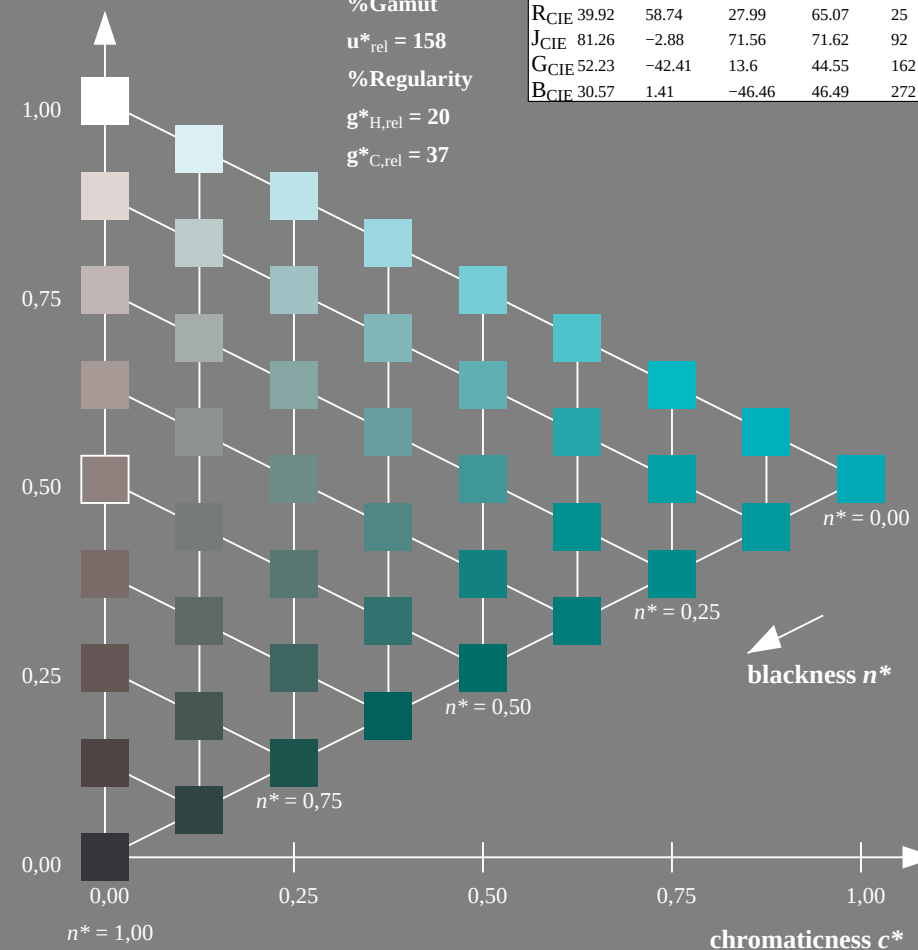
%Regularity

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

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

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          |



OE730-7, 9 step scales for constant CIE LAB hue 162/360 = 0.451 (left)



BAM-test chart OE73; Colorimetric systems TLS00 & TLS70

D65: 9 and 16 step colour scales for 10 hues

Output: Colorimetric Television Luminous System TLS70

for hue  $h^* = lab \cdot h = 162/360 = 0.451$

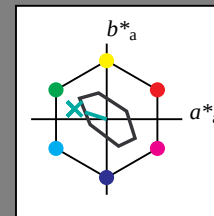
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue G

LCH\*Ma: 90 30 162

olv\*Ma: 0.0 1.0 0.53

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 16$

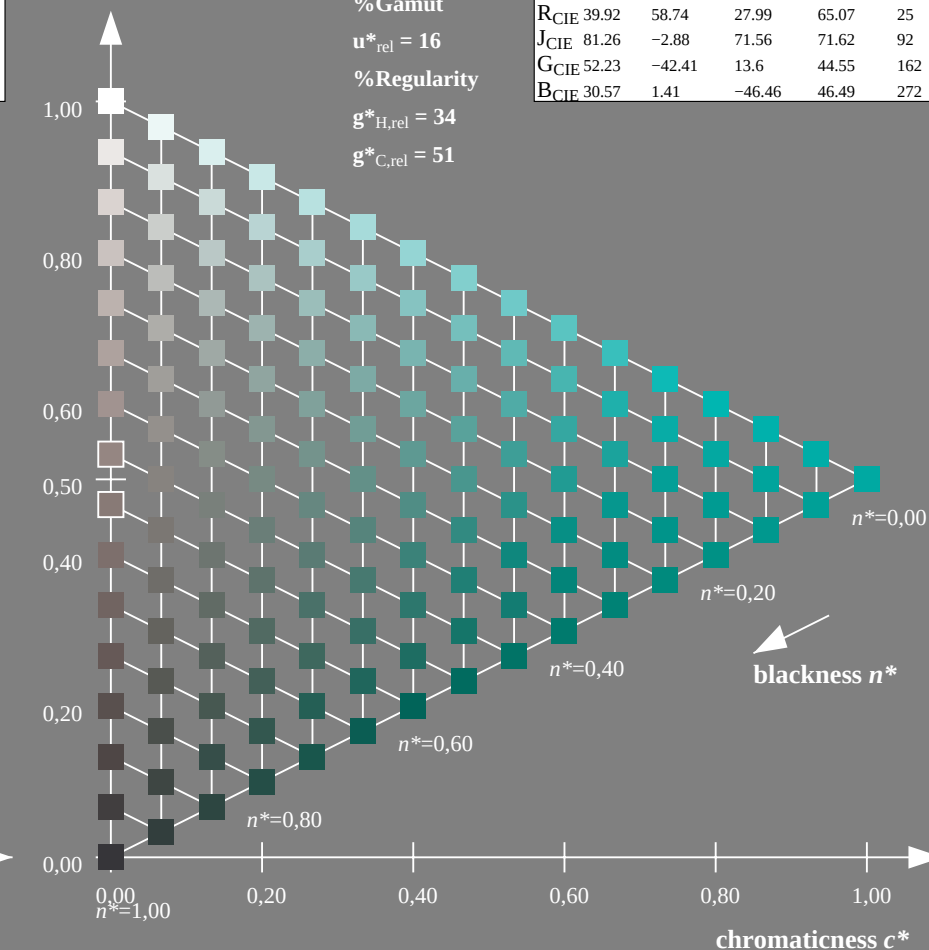
%Regularity

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

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

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          |



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

input:  $cmY0^* setcmykcolor$

output: no change compared to input



Input: Colorimetric Television Luminous System TLS00

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

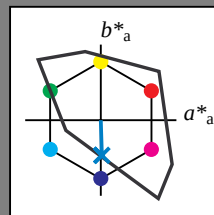
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue B

LCH\*Ma: 65 49 272

olv\*Ma: 0.0 0.61 1.0

triangle lightness  $t^*$



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          |

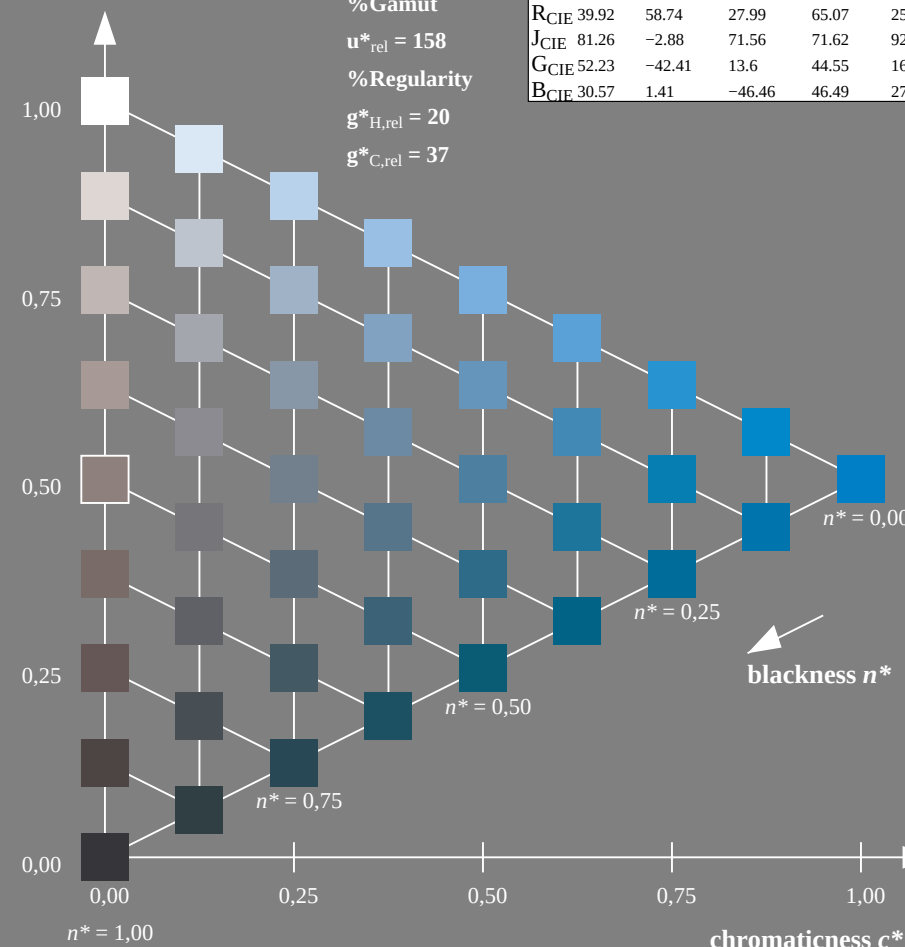
%Gamut

$u^*_{rel} = 158$

%Regularity

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

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



OE730-7, 9 step scales for constant CIELAB hue 272/360 = 0.755 (left)



BAM-test chart OE73; Colorimetric systems TLS00 & TLS70

D65: 9 and 16 step colour scales for 10 hues

Output: Colorimetric Television Luminous System TLS70

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

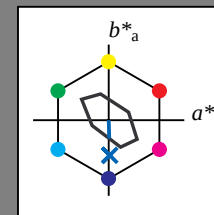
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue B

LCH\*Ma: 80 24 272

olv\*Ma: 0.0 0.4 1.0

triangle lightness  $t^*$



TLS70; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| 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          |

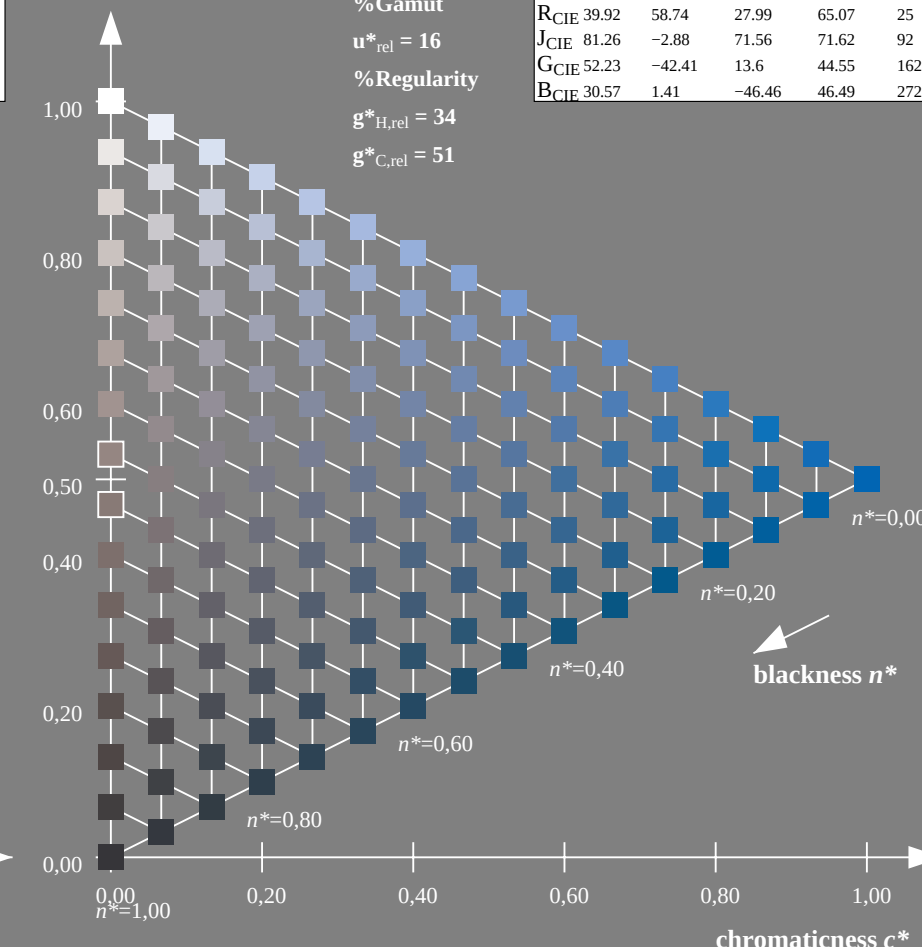
%Gamut

$u^*_{rel} = 16$

%Regularity

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

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



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

input:  $cmY0^* setcmykcolor$

output: no change compared to input

