

Input: Colorimetric Reflective System NRS11

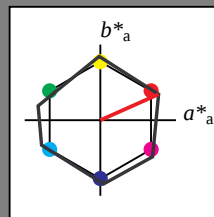
for hue  $h^* = lab \cdot h = 24/360 = 0.067$

LAB\*LCH, LAB\*NCH

D65: hue R

LCH\*Ma: 53 84 24

olv\*Ma: 1.0 0.0 0.0



NRS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 53.2        | 77.06   | 34.32   | 84.36        | 24           |
| J <sub>Ma</sub>    | 53.2        | -1.51   | 84.38   | 84.39        | 91           |
| G <sub>Ma</sub>    | 53.2        | -82.27  | 18.98   | 84.44        | 167          |
| G50B <sub>Ma</sub> | 53.2        | -77.72  | -32.98  | 84.44        | 203          |
| B <sub>Ma</sub>    | 53.2        | 4.37    | -84.28  | 84.41        | 273          |
| B50R <sub>Ma</sub> | 53.2        | 69.09   | -48.41  | 84.37        | 325          |
| N <sub>Ma</sub>    | 10.99       | 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       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

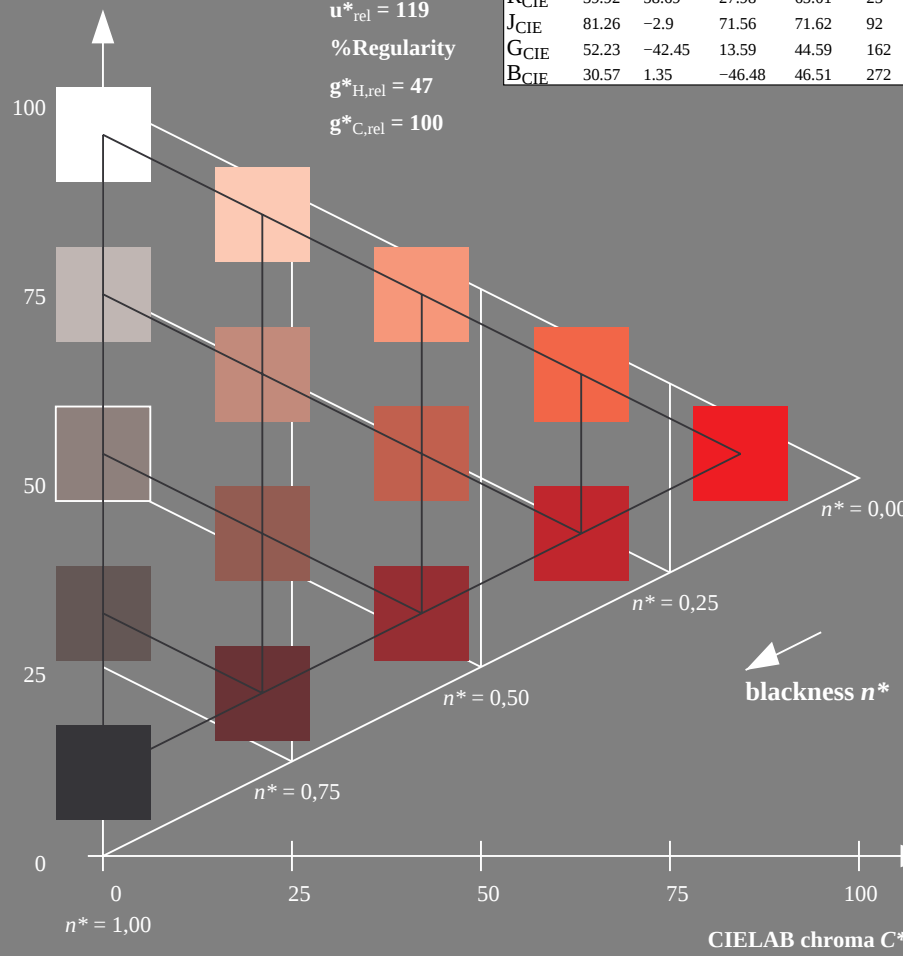
% Gamut

$u^*_{rel} = 119$

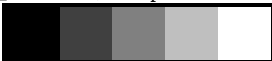
% Regularity

$g^*_{H,rel} = 47$

$g^*_{C,rel} = 100$



UE370-7, 5 step scales for constant CIELAB hue 24/360 = 0.067 (left)



BAM-test chart UE37; Colorimetric systems NRS11 & ORS18

D65: Coordinate systems of 5 step colour scales for 10 hues

Output: Colorimetric Reflective System ORS18

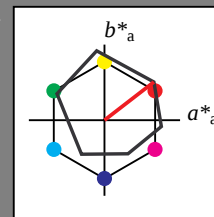
for hue  $h^* = lab \cdot h = 38/360 = 0.105$

LAB\*LCH, LAB\*NCH

D65: hue O

LCH\*Ma: 48 83 38

olv\*Ma: 1.0 0.0 0.0



ORS18; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O <sub>Ma</sub>  | 47.94       | 65.37   | 50.52   | 82.62        | 38           |
| Y <sub>Ma</sub>  | 90.37       | -10.27  | 91.77   | 92.34        | 96           |
| L <sub>Ma</sub>  | 50.9        | -62.79  | 34.95   | 71.87        | 151          |
| C <sub>Ma</sub>  | 58.62       | -30.35  | -45.01  | 54.3         | 236          |
| V <sub>Ma</sub>  | 25.71       | 31.11   | -44.42  | 54.24        | 305          |
| M <sub>Ma</sub>  | 48.13       | 75.27   | -8.35   | 75.73        | 354          |
| N <sub>Ma</sub>  | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>  | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub> | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub> | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub> | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub> | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

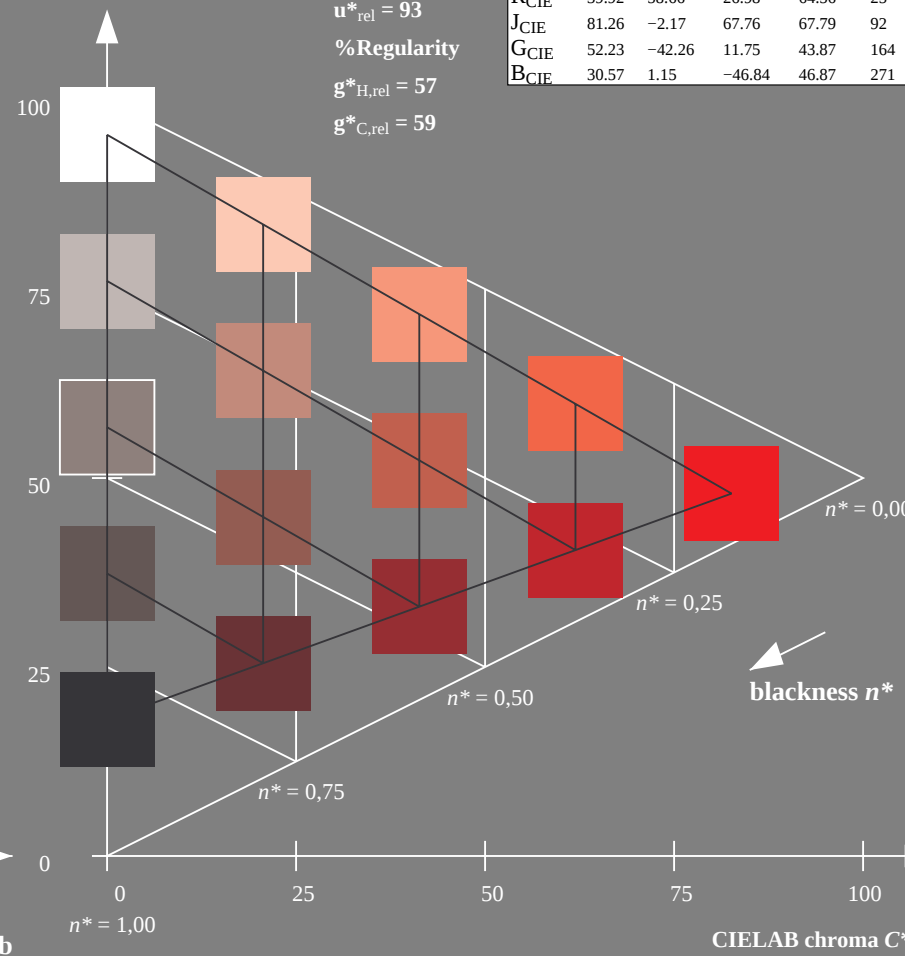
% Gamut

$u^*_{rel} = 93$

% Regularity

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

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



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

input: *cmY0\* setcmykcolor*

output: *no change compared to input*



Input: Colorimetric Reflective System NRS11

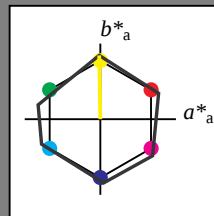
for hue  $h^* = lab \cdot h = 91/360 = 0.253$

LAB\*LCH, LAB\*NCH

D65: hue J

LCH\*Ma: 53 84 91

olv\*Ma: 1.0 1.0 0.0



NRS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 53.2        | 77.06   | 34.32   | 84.36        | 24           |
| J <sub>Ma</sub>    | 53.2        | -1.51   | 84.38   | 84.39        | 91           |
| G <sub>Ma</sub>    | 53.2        | -82.27  | 18.98   | 84.44        | 167          |
| G50B <sub>Ma</sub> | 53.2        | -77.72  | -32.98  | 84.44        | 203          |
| B <sub>Ma</sub>    | 53.2        | 4.37    | -84.28  | 84.41        | 273          |
| B50R <sub>Ma</sub> | 53.2        | 69.09   | -48.41  | 84.37        | 325          |
| N <sub>Ma</sub>    | 10.99       | 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       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

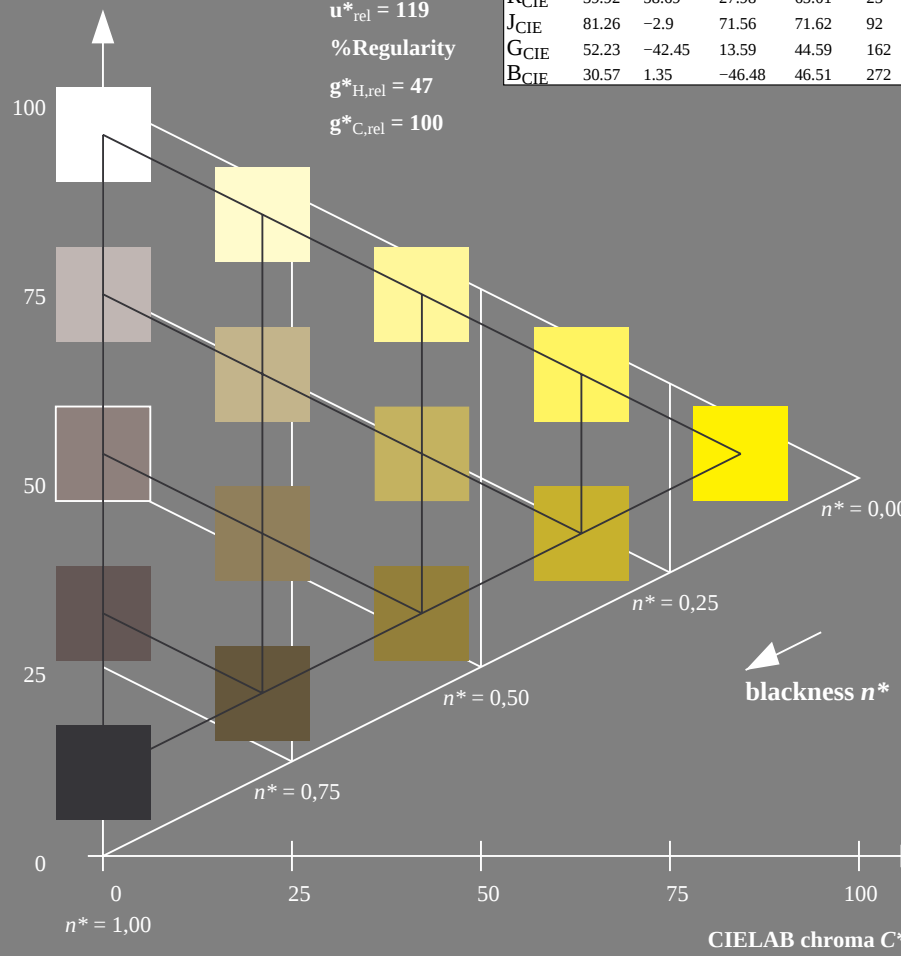
% Gamut

$u^*_{rel} = 119$

% Regularity

$g^*_{H,rel} = 47$

$g^*_{C,rel} = 100$



UE370-7, 5 step scales for constant CIELAB hue 91/360 = 0.253 (left)

Output: Colorimetric Reflective System ORS18

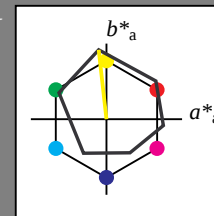
for hue  $h^* = lab \cdot h = 96/360 = 0.268$

LAB\*LCH, LAB\*NCH

D65: hue Y

LCH\*Ma: 90 92 96

olv\*Ma: 1.0 1.0 0.0



ORS18; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O <sub>Ma</sub>  | 47.94       | 65.37   | 50.52   | 82.62        | 38           |
| Y <sub>Ma</sub>  | 90.37       | -10.27  | 91.77   | 92.34        | 96           |
| L <sub>Ma</sub>  | 50.9        | -62.79  | 34.95   | 71.87        | 151          |
| C <sub>Ma</sub>  | 58.62       | -30.35  | -45.01  | 54.3         | 236          |
| V <sub>Ma</sub>  | 25.71       | 31.11   | -44.42  | 54.24        | 305          |
| M <sub>Ma</sub>  | 48.13       | 75.27   | -8.35   | 75.73        | 354          |
| N <sub>Ma</sub>  | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>  | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub> | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub> | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub> | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub> | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

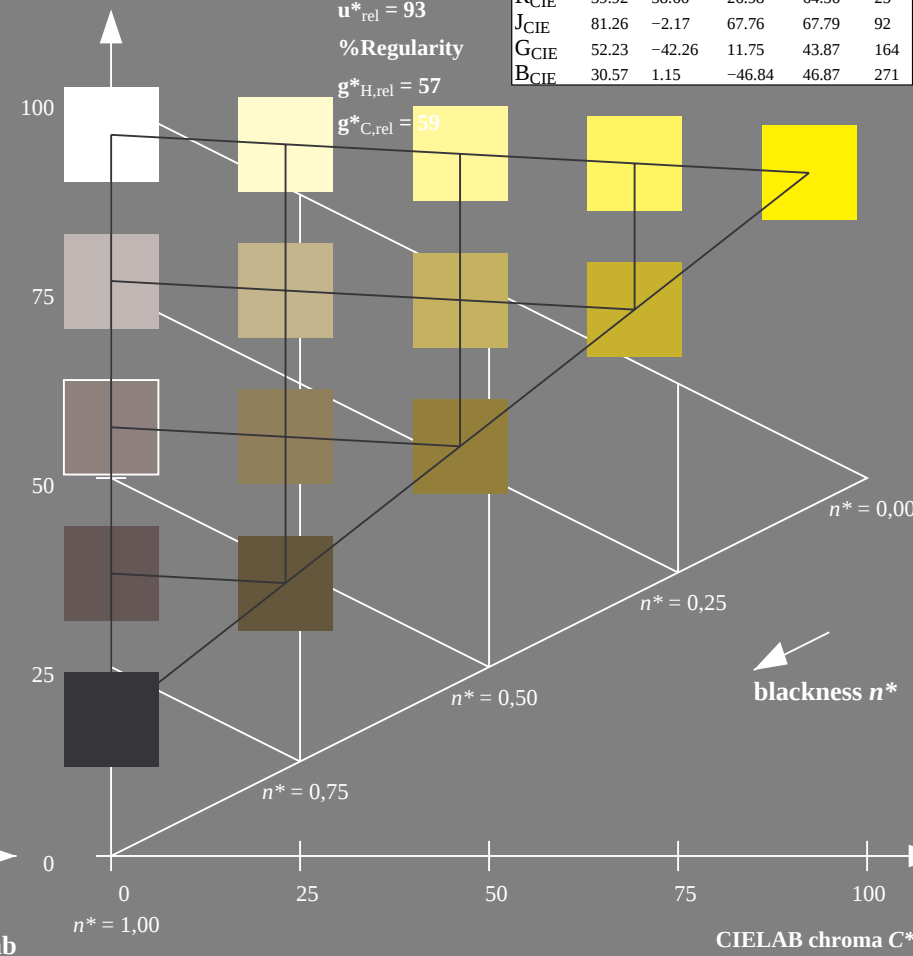
% Gamut

$u^*_{rel} = 93$

% Regularity

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

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



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

BAM-test chart UE37; Colorimetric systems NRS11 & ORS18

D65: Coordinate systems of 5 step colour scales for 10 hues

input:  $cmY0^* setcmykcolor$

output: no change compared to input

Input: Colorimetric Reflective System NRS11

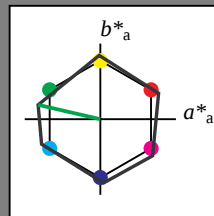
for hue  $h^* = lab \cdot h = 167/360 = 0.464$

LAB\*LCH, LAB\*NCH

D65: hue G

LCH\*Ma: 53 84 167

olv\*Ma: 0.0 1.0 0.0



NRS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 53.2        | 77.06   | 34.32   | 84.36        | 24           |
| J <sub>Ma</sub>    | 53.2        | -1.51   | 84.38   | 84.39        | 91           |
| G <sub>Ma</sub>    | 53.2        | -82.27  | 18.98   | 84.44        | 167          |
| G50B <sub>Ma</sub> | 53.2        | -77.72  | -32.98  | 84.44        | 203          |
| B <sub>Ma</sub>    | 53.2        | 4.37    | -84.28  | 84.41        | 273          |
| B50R <sub>Ma</sub> | 53.2        | 69.09   | -48.41  | 84.37        | 325          |
| N <sub>Ma</sub>    | 10.99       | 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       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

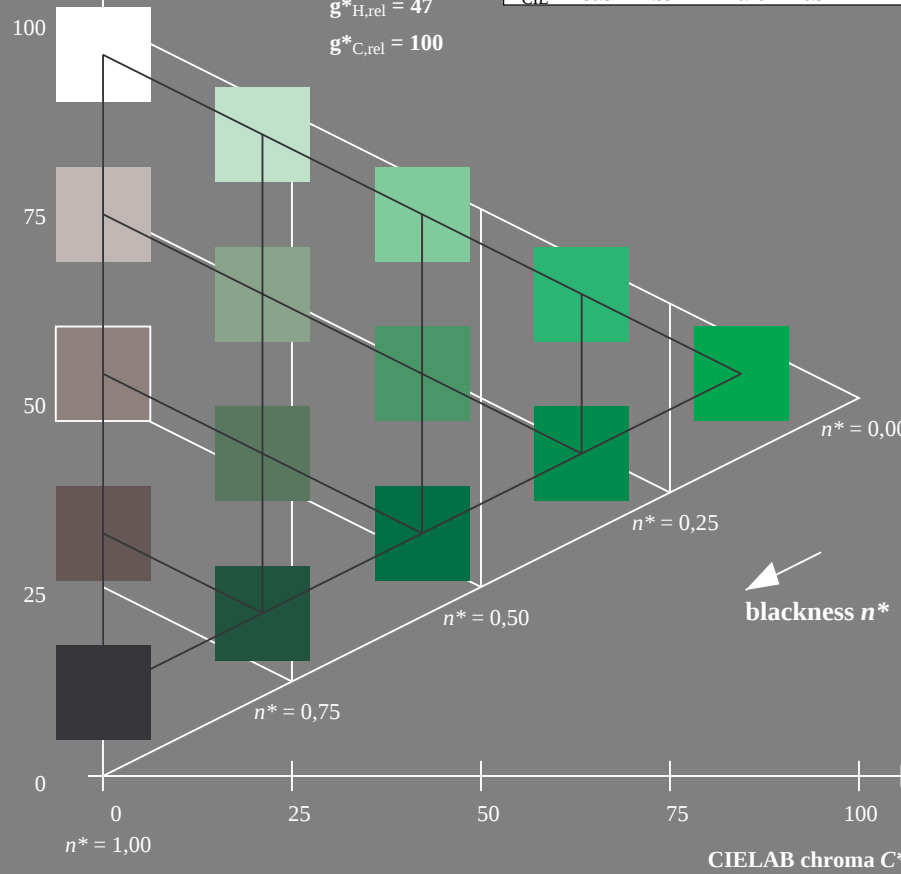
% Gamut

$u^*_{rel} = 119$

% Regularity

$g^*_{H,rel} = 47$

$g^*_{C,rel} = 100$



UE370-7, 5 step scales for constant CIELAB hue 167/360 = 0.464 (left)

Output: Colorimetric Reflective System ORS18

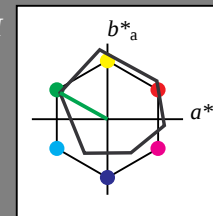
for hue  $h^* = lab \cdot h = 151/360 = 0.419$

LAB\*LCH, LAB\*NCH

D65: hue L

LCH\*Ma: 51 72 151

olv\*Ma: 0.0 1.0 0.0



ORS18; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O <sub>Ma</sub>  | 47.94       | 65.37   | 50.52   | 82.62        | 38           |
| Y <sub>Ma</sub>  | 90.37       | -10.27  | 91.77   | 92.34        | 96           |
| L <sub>Ma</sub>  | 50.9        | -62.79  | 34.95   | 71.87        | 151          |
| C <sub>Ma</sub>  | 58.62       | -30.35  | -45.01  | 54.3         | 236          |
| V <sub>Ma</sub>  | 25.71       | 31.11   | -44.42  | 54.24        | 305          |
| M <sub>Ma</sub>  | 48.13       | 75.27   | -8.35   | 75.73        | 354          |
| N <sub>Ma</sub>  | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>  | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub> | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub> | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub> | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub> | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

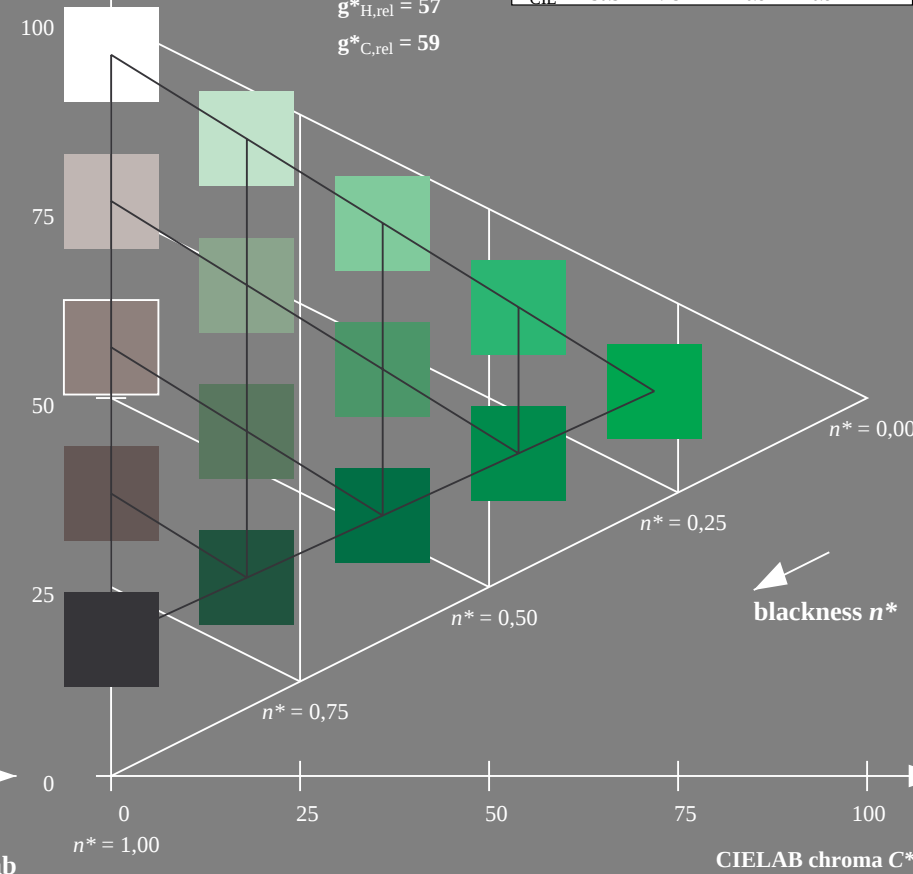
% Gamut

$u^*_{rel} = 93$

% Regularity

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

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



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

BAM-test chart UE37; Colorimetric systems NRS11 & ORS18

D65: Coordinate systems of 5 step colour scales for 10 hues

input:  $cmY0^* setcmykcolor$

output: no change compared to input

Input: Colorimetric Reflective System NRS11

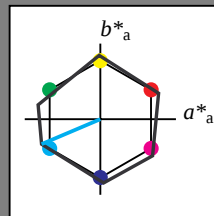
for hue  $h^* = lab \cdot h = 203/360 = 0.564$

LAB\*LCH, LAB\*NCH

D65: hue G50B

LCH\*Ma: 53 84 203

olv\*Ma: 0.0 1.0 1.0



NRS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 53.2        | 77.06   | 34.32   | 84.36        | 24           |
| J <sub>Ma</sub>    | 53.2        | -1.51   | 84.38   | 84.39        | 91           |
| G <sub>Ma</sub>    | 53.2        | -82.27  | 18.98   | 84.44        | 167          |
| G50B <sub>Ma</sub> | 53.2        | -77.72  | -32.98  | 84.44        | 203          |
| B <sub>Ma</sub>    | 53.2        | 4.37    | -84.28  | 84.41        | 273          |
| B50R <sub>Ma</sub> | 53.2        | 69.09   | -48.41  | 84.37        | 325          |
| N <sub>Ma</sub>    | 10.99       | 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       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

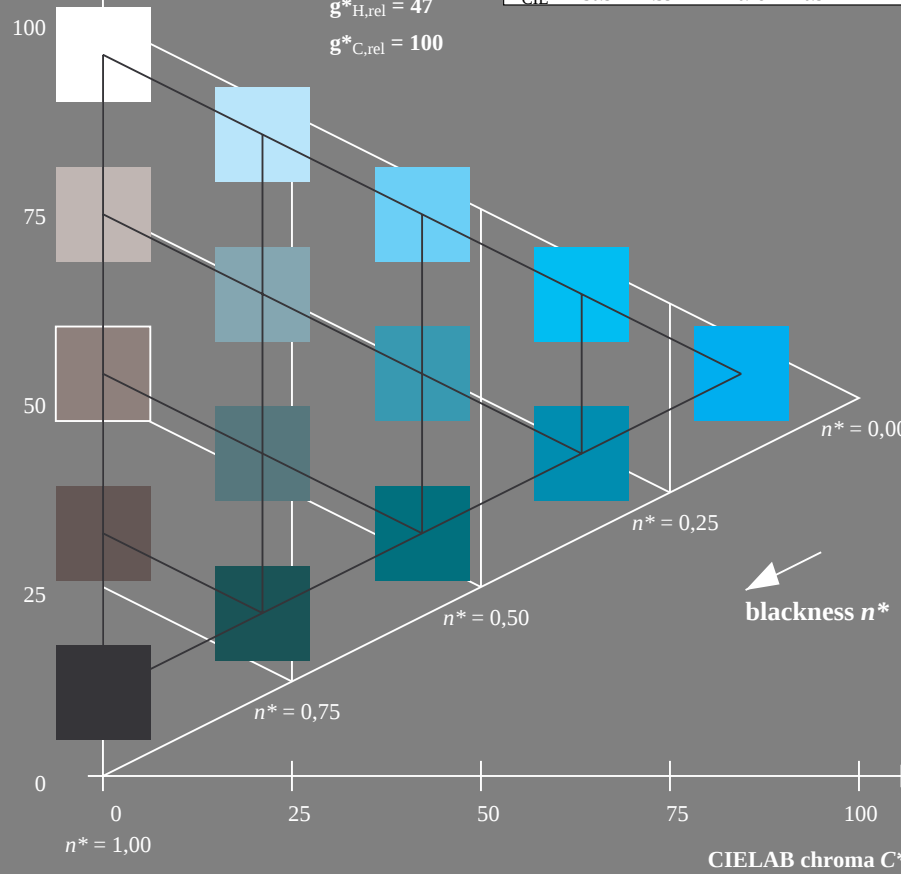
% Gamut

$u^*_{rel} = 119$

% Regularity

$g^*_{H,rel} = 47$

$g^*_{C,rel} = 100$



UE370-7, 5 step scales for constant CIELAB hue 203/360 = 0.564 (left)

Output: Colorimetric Reflective System ORS18

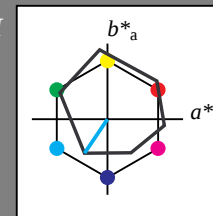
for hue  $h^* = lab \cdot h = 236/360 = 0.656$

LAB\*LCH, LAB\*NCH

D65: hue C

LCH\*Ma: 59 54 236

olv\*Ma: 0.0 1.0 1.0



ORS18; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O <sub>Ma</sub>  | 47.94       | 65.37   | 50.52   | 82.62        | 38           |
| Y <sub>Ma</sub>  | 90.37       | -10.27  | 91.77   | 92.34        | 96           |
| L <sub>Ma</sub>  | 50.9        | -62.79  | 34.95   | 71.87        | 151          |
| C <sub>Ma</sub>  | 58.62       | -30.35  | -45.01  | 54.3         | 236          |
| V <sub>Ma</sub>  | 25.71       | 31.11   | -44.42  | 54.24        | 305          |
| M <sub>Ma</sub>  | 48.13       | 75.27   | -8.35   | 75.73        | 354          |
| N <sub>Ma</sub>  | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>  | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub> | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub> | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub> | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub> | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

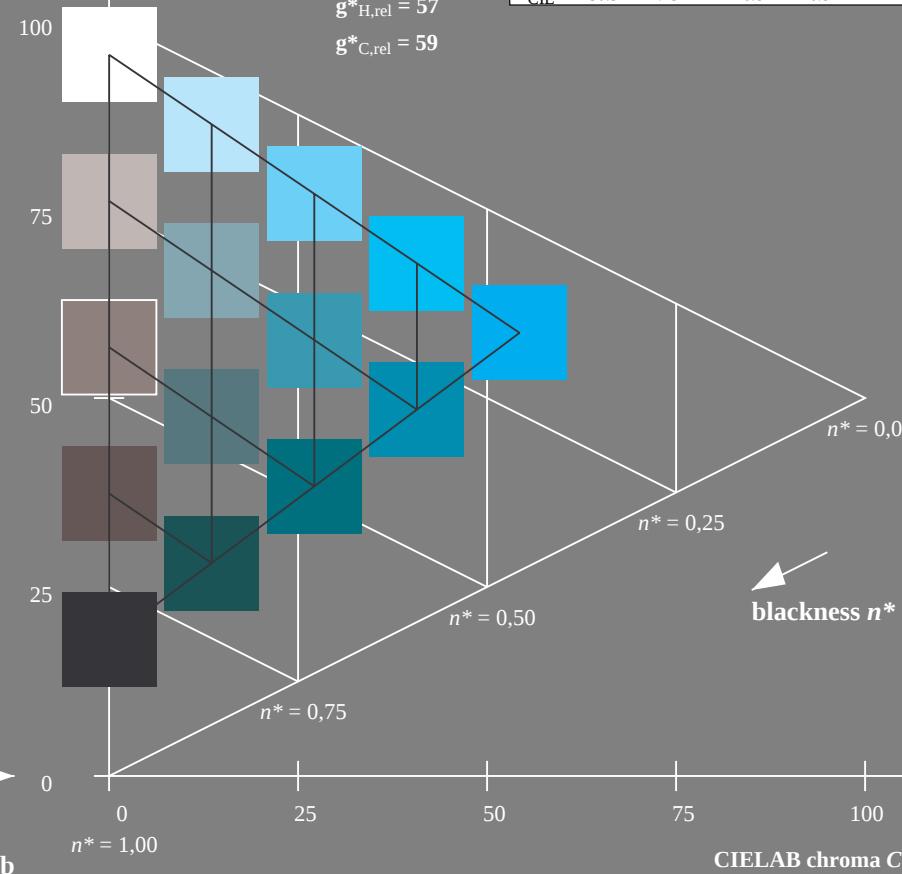
% Gamut

$u^*_{rel} = 93$

% Regularity

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

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



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

BAM-test chart UE37; Colorimetric systems NRS11 & ORS18

D65: Coordinate systems of 5 step colour scales for 10 hues

input:  $cmY0^* setcmykcolor$

output: no change compared to input

Input: Colorimetric Reflective System NRS11

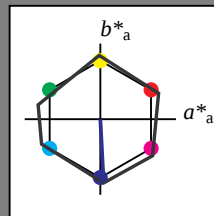
for hue  $h^* = lab \cdot h = 273/360 = 0.758$

LAB\*LCH, LAB\*NCH

D65: hue B

LCH\*Ma: 53 84 273

olv\*Ma: 0.0 0.0 1.0



NRS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 53.2        | 77.06   | 34.32   | 84.36        | 24           |
| J <sub>Ma</sub>    | 53.2        | -1.51   | 84.38   | 84.39        | 91           |
| G <sub>Ma</sub>    | 53.2        | -82.27  | 18.98   | 84.44        | 167          |
| G50B <sub>Ma</sub> | 53.2        | -77.72  | -32.98  | 84.44        | 203          |
| B <sub>Ma</sub>    | 53.2        | 4.37    | -84.28  | 84.41        | 273          |
| B50R <sub>Ma</sub> | 53.2        | 69.09   | -48.41  | 84.37        | 325          |
| N <sub>Ma</sub>    | 10.99       | 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       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

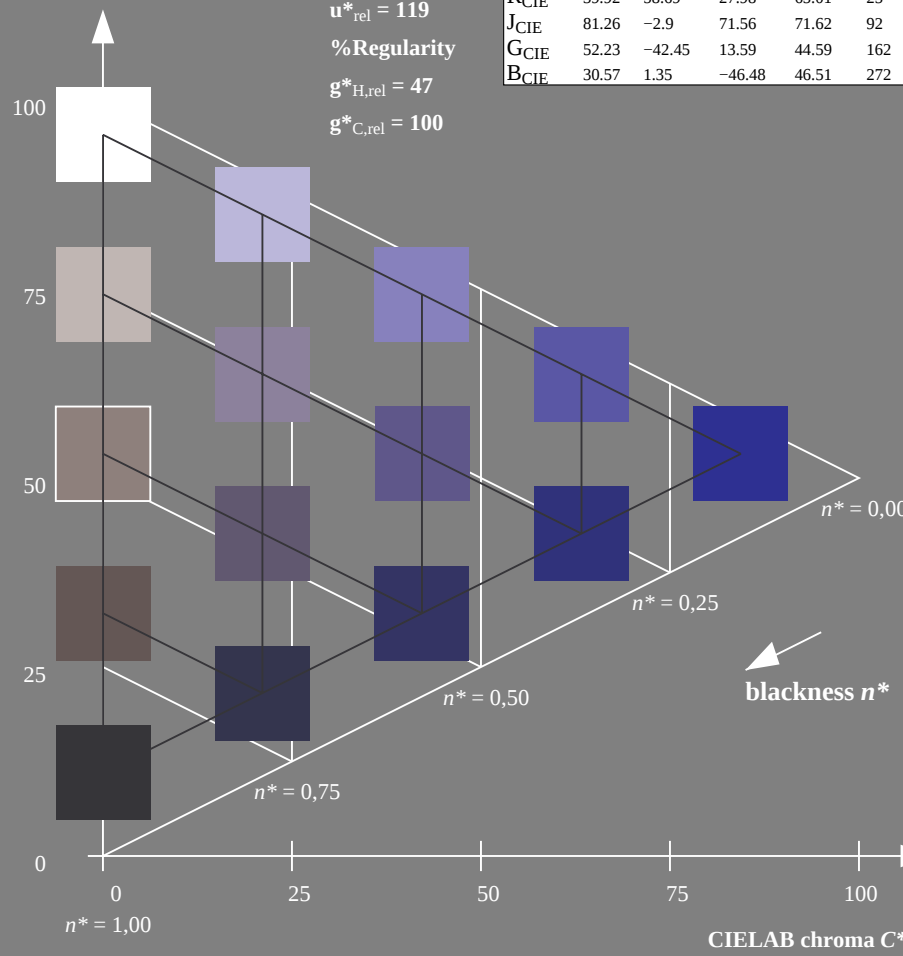
% Gamut

$u^*_{rel} = 119$

% Regularity

$g^*_{H,rel} = 47$

$g^*_{C,rel} = 100$



UE370-7, 5 step scales for constant CIELAB hue 273/360 = 0.758 (left)

Output: Colorimetric Reflective System ORS18

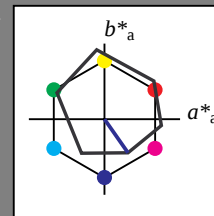
for hue  $h^* = lab \cdot h = 305/360 = 0.847$

LAB\*LCH, LAB\*NCH

D65: hue V

LCH\*Ma: 26 54 305

olv\*Ma: 0.0 0.0 1.0



ORS18; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O <sub>Ma</sub>  | 47.94       | 65.37   | 50.52   | 82.62        | 38           |
| Y <sub>Ma</sub>  | 90.37       | -10.27  | 91.77   | 92.34        | 96           |
| L <sub>Ma</sub>  | 50.9        | -62.79  | 34.95   | 71.87        | 151          |
| C <sub>Ma</sub>  | 58.62       | -30.35  | -45.01  | 54.3         | 236          |
| V <sub>Ma</sub>  | 25.71       | 31.11   | -44.42  | 54.24        | 305          |
| M <sub>Ma</sub>  | 48.13       | 75.27   | -8.35   | 75.73        | 354          |
| N <sub>Ma</sub>  | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>  | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub> | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub> | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub> | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub> | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

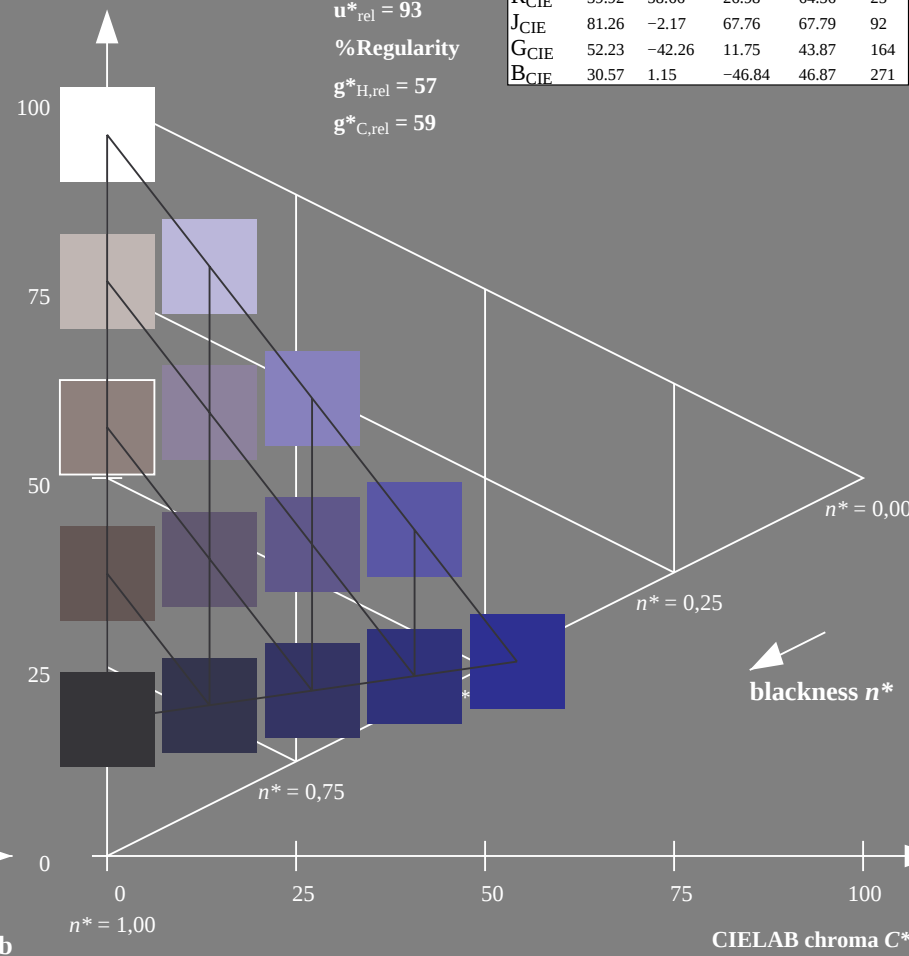
% Gamut

$u^*_{rel} = 93$

% Regularity

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

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



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

BAM-test chart UE37; Colorimetric systems NRS11 & ORS18

D65: Coordinate systems of 5 step colour scales for 10 hues

input:  $cmY0^* setcmykcolor$

output: no change compared to input

**Input: Colorimetric Reflective System NRS11**

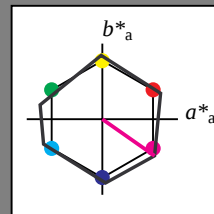
**for hue  $h^* = lab^*h = 325/360 = 0.903$**

**LAB\*LCH, LAB\*NCH**

D65: hue B50R

LCH\*Ma: 53 84 325

**olv\*Ma: 1.0 0.0 1.0**



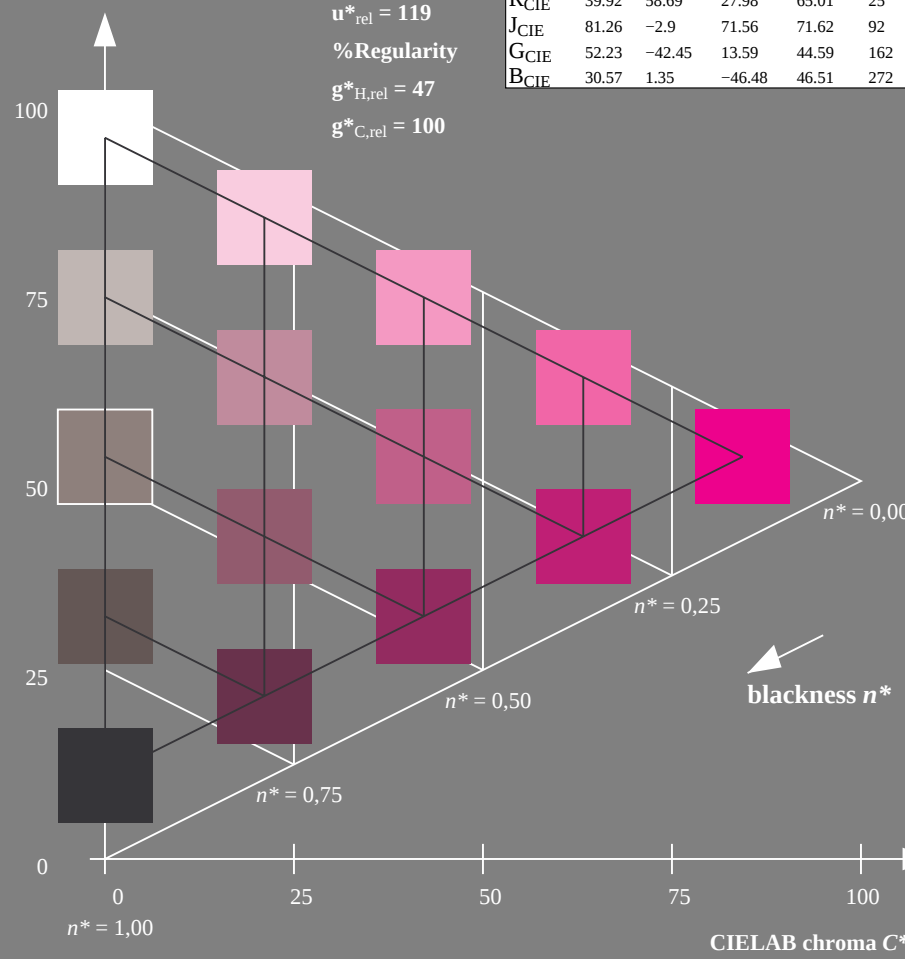
| NRS11; adapted (a) CIELAB data |            |            |            |              |              |
|--------------------------------|------------|------------|------------|--------------|--------------|
|                                | $L^*_{*a}$ | $a^*_{*a}$ | $b^*_{*a}$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| R <sub>Ma</sub>                | 53.2       | 77.06      | 34.32      | 84.36        | 24           |
| J <sub>Ma</sub>                | 53.2       | -1.51      | 84.38      | 84.39        | 91           |
| G <sub>Ma</sub>                | 53.2       | -82.27     | 18.98      | 84.44        | 167          |
| G50B <sub>Ma</sub>             | 53.2       | -77.72     | -32.98     | 84.44        | 203          |
| B <sub>Ma</sub>                | 53.2       | 4.37       | -84.28     | 84.41        | 273          |
| B50R <sub>Ma</sub>             | 53.2       | 69.09      | -48.41     | 84.37        | 325          |
| N <sub>Ma</sub>                | 10.99      | 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      | 58.69      | 27.98      | 65.01        | 25           |
| J <sub>CIE</sub>               | 81.26      | -2.9       | 71.56      | 71.62        | 92           |
| G <sub>CIE</sub>               | 52.23      | -42.45     | 13.59      | 44.59        | 162          |
| B <sub>CIE</sub>               | 30.57      | 1.35       | -46.48     | 46.51        | 272          |

**CIELAB lightness  $L^*$**

### %Gamut

$$\mathbf{u}_{\text{rel}}^* = 119$$

### %Regularity

$$g^*_{H,rel} = 47$$
$$g^*_{C,rel} = 100$$


UE370-7, 5 step scales for constant CIELAB hue 325/360 = 0.903 (left)

BAM-test chart UE37; Colorimetric systems NRS11 &amp; ORS18

D65: Coordinate systems of 5 step colour scales for 10 hues

### Output: Colorimetric Reflective System ORS18

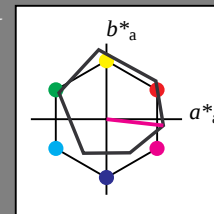
for hue  $h^* = lab^*h = 354/360 = 0.982$

*LAB\*LCH, LAB\*NCH*

D65: hue M

**LCH\*Ma: 48 76 354**

olv\*Ma: 1.0 0.0 1.0



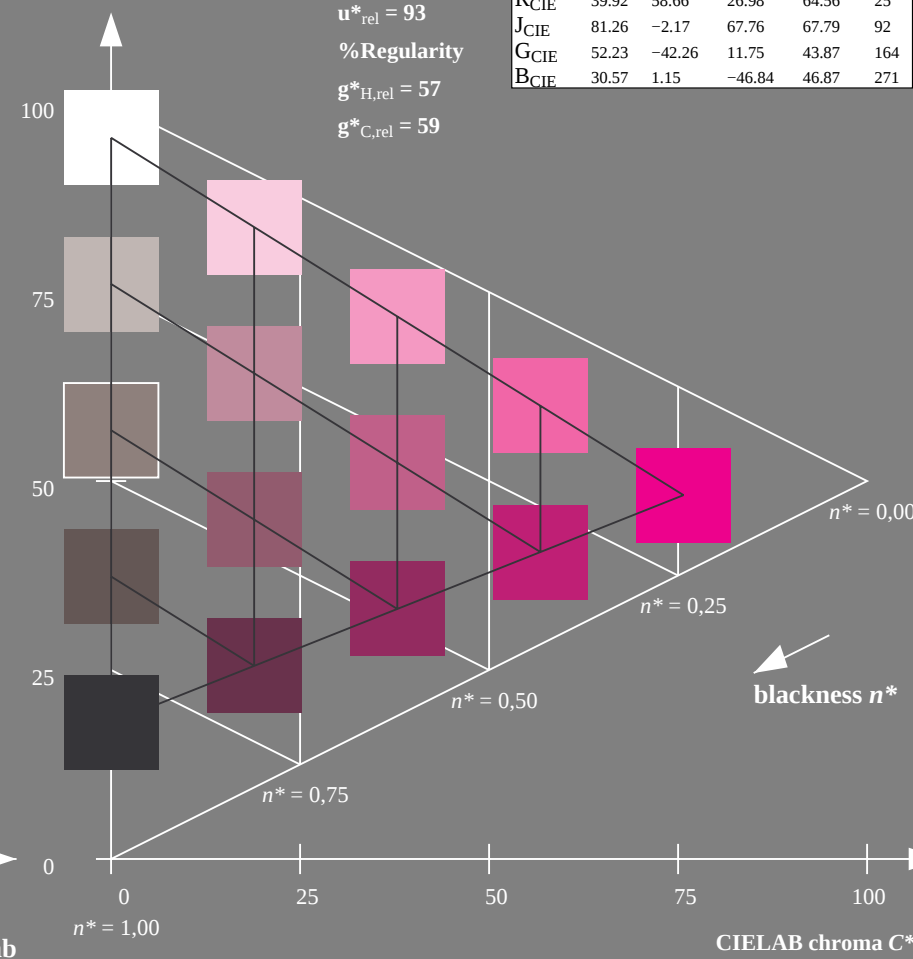
| ORS18; adapted (a) CIELAB data |            |            |            |              |              |
|--------------------------------|------------|------------|------------|--------------|--------------|
|                                | $L^*_{*a}$ | $a^*_{*a}$ | $b^*_{*a}$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| O <sub>Ma</sub>                | 47.94      | 65.37      | 50.52      | 82.62        | 38           |
| Y <sub>Ma</sub>                | 90.37      | -10.27     | 91.77      | 92.34        | 96           |
| L <sub>Ma</sub>                | 50.9       | -62.79     | 34.95      | 71.87        | 151          |
| C <sub>Ma</sub>                | 58.62      | -30.35     | -45.01     | 54.3         | 236          |
| V <sub>Ma</sub>                | 25.71      | 31.11      | -44.42     | 54.24        | 305          |
| M <sub>Ma</sub>                | 48.13      | 75.27      | -8.35      | 75.73        | 354          |
| N <sub>Ma</sub>                | 18.01      | 0.0        | 0.0        | 0.0          | 0            |
| W <sub>Ma</sub>                | 95.41      | 0.0        | 0.0        | 0.0          | 0            |
| R <sub>CIE</sub>               | 39.92      | 58.66      | 26.98      | 64.56        | 25           |
| J <sub>CIE</sub>               | 81.26      | -2.17      | 67.76      | 67.79        | 92           |
| G <sub>CIE</sub>               | 52.23      | -42.26     | 11.75      | 43.87        | 164          |
| B <sub>CIE</sub>               | 30.57      | 1.15       | -46.84     | 46.87        | 271          |

**CIELAB lightness  $L^*$**

%Gamut

$$\mathbf{u}_{rel}^* = 93$$

### %Regularity

$$g^*_{H,rel} = 57$$
$$g^*_{C,rel} = 59$$


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

input: *cmv0\** *setcmvcolor*

output: no change compared to input

output: *no change compared to input*

Input: Colorimetric Reflective System NRS11

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

LAB\*LCH, LAB\*NCH

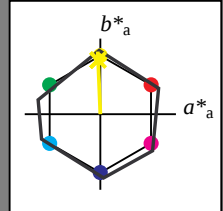
D65: hue J

LCH\*Ma: 53 83 92

olv\*Ma: 0.98 1.0 0.0

NRS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 53.2        | 77.06   | 34.32   | 84.36        | 24           |
| J <sub>Ma</sub>    | 53.2        | -1.51   | 84.38   | 84.39        | 91           |
| G <sub>Ma</sub>    | 53.2        | -82.27  | 18.98   | 84.44        | 167          |
| G50B <sub>Ma</sub> | 53.2        | -77.72  | -32.98  | 84.44        | 203          |
| B <sub>Ma</sub>    | 53.2        | 4.37    | -84.28  | 84.41        | 273          |
| B50R <sub>Ma</sub> | 53.2        | 69.09   | -48.41  | 84.37        | 325          |
| N <sub>Ma</sub>    | 10.99       | 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       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |



CIELAB lightness  $L^*$

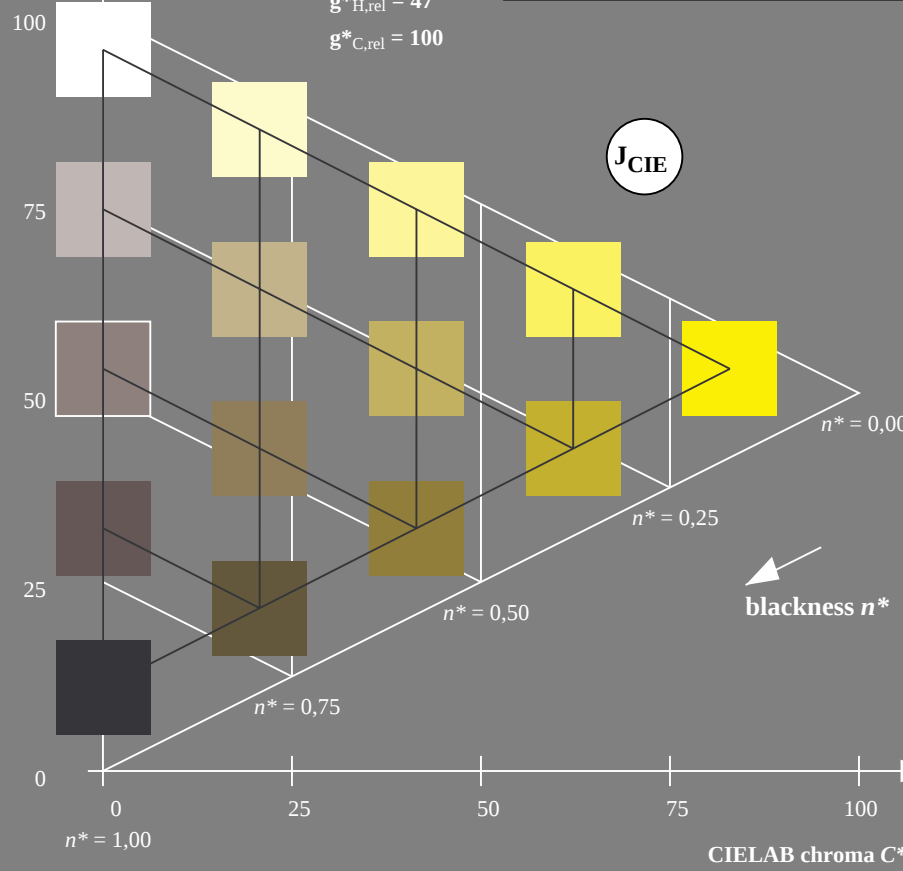
% Gamut

$u^*_{rel} = 119$

% Regularity

$g^*_{H,rel} = 47$

$g^*_{C,rel} = 100$



UE370-7, 5 step scales for constant CIELAB hue 92/360 = 0.256 (left)

Output: Colorimetric Reflective System ORS18

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

LAB\*LCH, LAB\*NCH

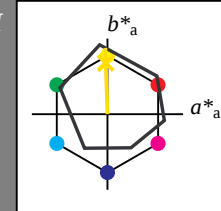
D65: hue J

LCH\*Ma: 86 88 92

olv\*Ma: 1.0 0.9 0.0

ORS18; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O <sub>Ma</sub>  | 47.94       | 65.37   | 50.52   | 82.62        | 38           |
| Y <sub>Ma</sub>  | 90.37       | -10.27  | 91.77   | 92.34        | 96           |
| L <sub>Ma</sub>  | 50.9        | -62.79  | 34.95   | 71.87        | 151          |
| C <sub>Ma</sub>  | 58.62       | -30.35  | -45.01  | 54.3         | 236          |
| V <sub>Ma</sub>  | 25.71       | 31.11   | -44.42  | 54.24        | 305          |
| M <sub>Ma</sub>  | 48.13       | 75.27   | -8.35   | 75.73        | 354          |
| N <sub>Ma</sub>  | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>  | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub> | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub> | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub> | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub> | 30.57       | 1.15    | -46.84  | 46.87        | 271          |



CIELAB lightness  $L^*$

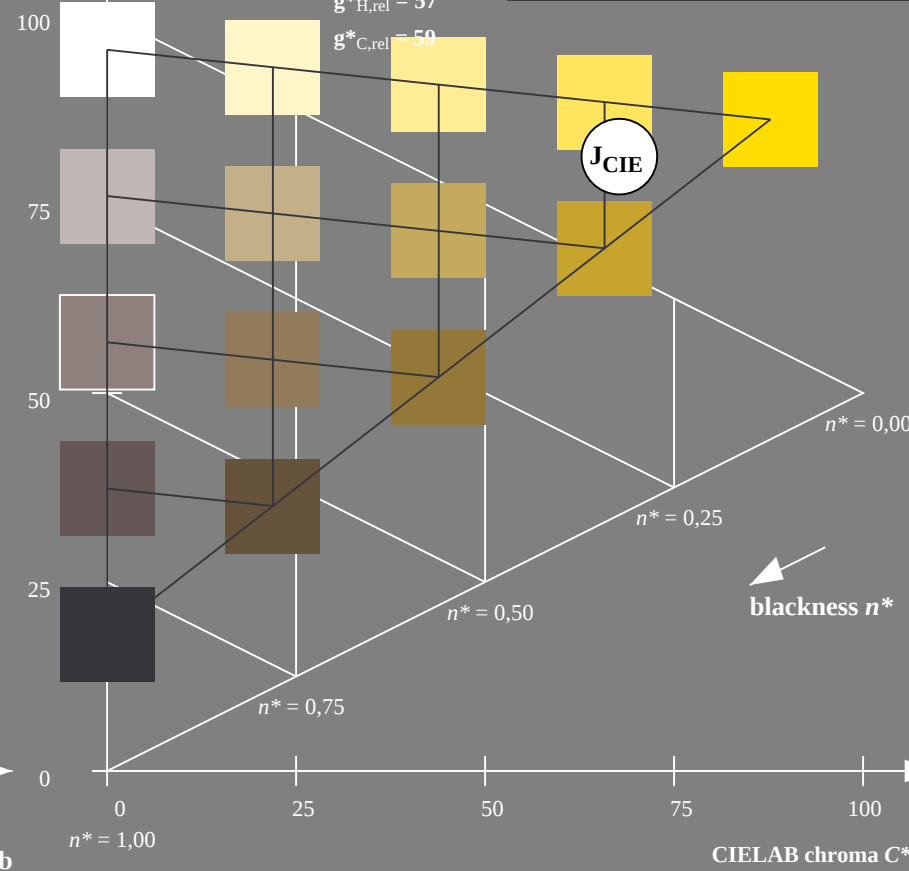
% Gamut

$u^*_{rel} = 93$

% Regularity

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

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



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

BAM-test chart UE37; Colorimetric systems NRS11 & ORS18

D65: Coordinate systems of 5 step colour scales for 10 hues

input:  $cmY0^* setcmykcolor$

output: no change compared to input

Input: Colorimetric Reflective System NRS11

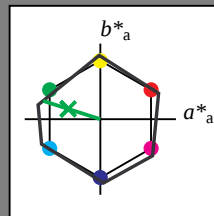
for hue  $h^* = lab \cdot h = 162/360 = 0.451$

LAB\*LCH, LAB\*NCH

D65: hue G

LCH\*Ma: 53 80 162

olv\*Ma: 0.08 1.0 0.0



NRS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 53.2        | 77.06   | 34.32   | 84.36        | 24           |
| J <sub>Ma</sub>    | 53.2        | -1.51   | 84.38   | 84.39        | 91           |
| G <sub>Ma</sub>    | 53.2        | -82.27  | 18.98   | 84.44        | 167          |
| G50B <sub>Ma</sub> | 53.2        | -77.72  | -32.98  | 84.44        | 203          |
| B <sub>Ma</sub>    | 53.2        | 4.37    | -84.28  | 84.41        | 273          |
| B50R <sub>Ma</sub> | 53.2        | 69.09   | -48.41  | 84.37        | 325          |
| N <sub>Ma</sub>    | 10.99       | 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       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

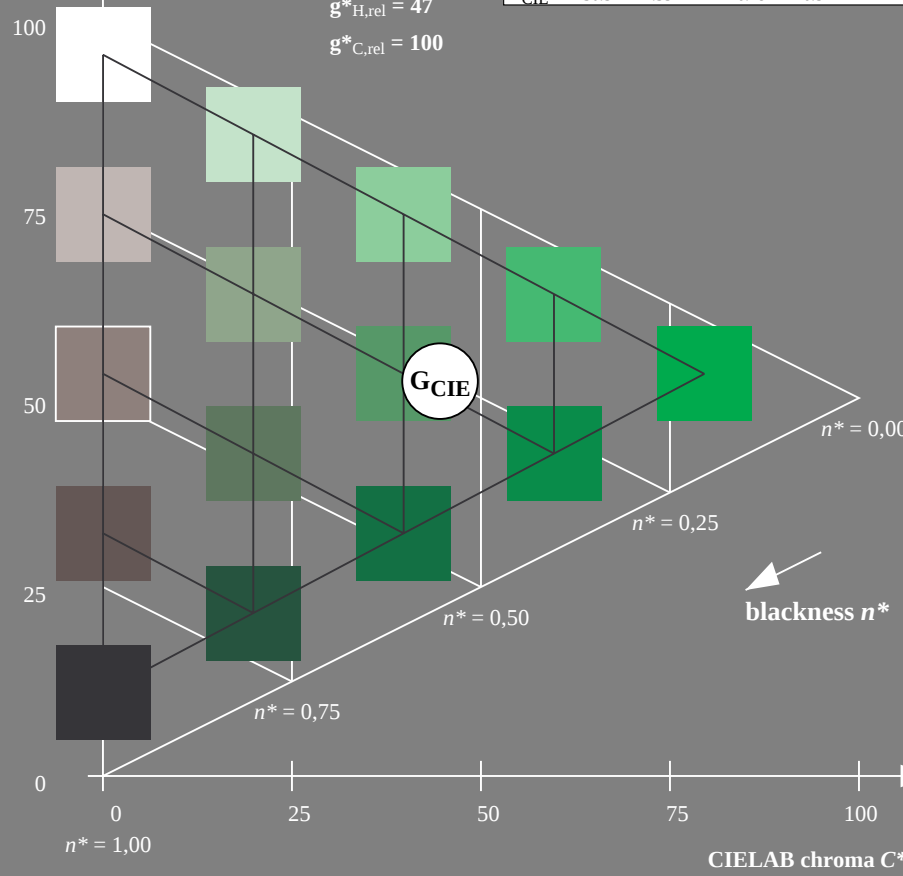
% Gamut

$u^*_{rel} = 119$

% Regularity

$g^*_{H,rel} = 47$

$g^*_{C,rel} = 100$



Output: Colorimetric Reflective System ORS18

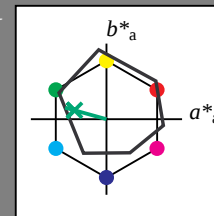
for hue  $h^* = lab \cdot h = 164/360 = 0.457$

LAB\*LCH, LAB\*NCH

D65: hue G

LCH\*Ma: 53 57 164

olv\*Ma: 0.0 1.0 0.25



ORS18; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O <sub>Ma</sub>  | 47.94       | 65.37   | 50.52   | 82.62        | 38           |
| Y <sub>Ma</sub>  | 90.37       | -10.27  | 91.77   | 92.34        | 96           |
| L <sub>Ma</sub>  | 50.9        | -62.79  | 34.95   | 71.87        | 151          |
| C <sub>Ma</sub>  | 58.62       | -30.35  | -45.01  | 54.3         | 236          |
| V <sub>Ma</sub>  | 25.71       | 31.11   | -44.42  | 54.24        | 305          |
| M <sub>Ma</sub>  | 48.13       | 75.27   | -8.35   | 75.73        | 354          |
| N <sub>Ma</sub>  | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>  | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub> | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub> | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub> | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub> | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

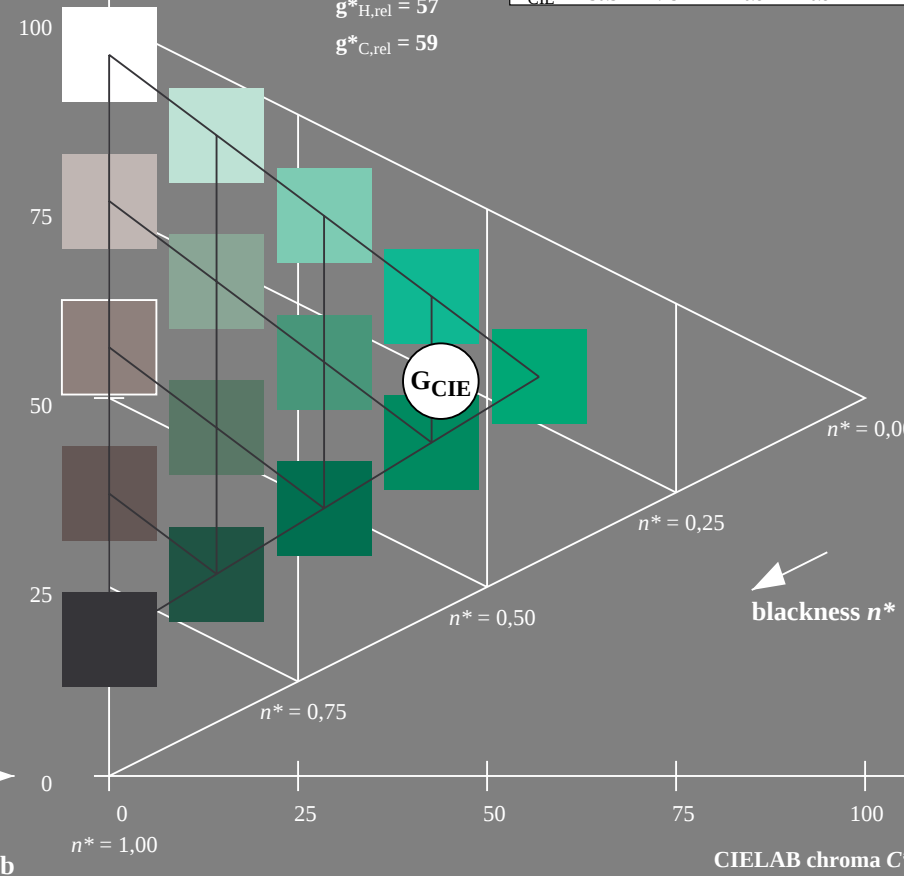
% Gamut

$u^*_{rel} = 93$

% Regularity

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

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



UE370-7, 5 step scales for constant CIELAB hue 162/360 = 0.451 (left)

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

BAM-test chart UE37; Colorimetric systems NRS11 & ORS18

D65: Coordinate systems of 5 step colour scales for 10 hues

input:  $cmY0^* setcmykcolor$

output: no change compared to input

Input: Colorimetric Reflective System NRS11

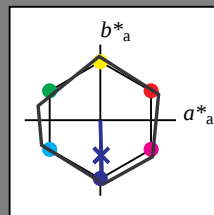
for hue  $h^* = lab \cdot h = 272/360 = 0.755$

LAB\*LCH, LAB\*NCH

D65: hue B

LCH\*Ma: 53 83 272

olv\*Ma: 0.0 0.02 1.0



NRS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 53.2        | 77.06   | 34.32   | 84.36        | 24           |
| J <sub>Ma</sub>    | 53.2        | -1.51   | 84.38   | 84.39        | 91           |
| G <sub>Ma</sub>    | 53.2        | -82.27  | 18.98   | 84.44        | 167          |
| G50B <sub>Ma</sub> | 53.2        | -77.72  | -32.98  | 84.44        | 203          |
| B <sub>Ma</sub>    | 53.2        | 4.37    | -84.28  | 84.41        | 273          |
| B50R <sub>Ma</sub> | 53.2        | 69.09   | -48.41  | 84.37        | 325          |
| N <sub>Ma</sub>    | 10.99       | 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       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

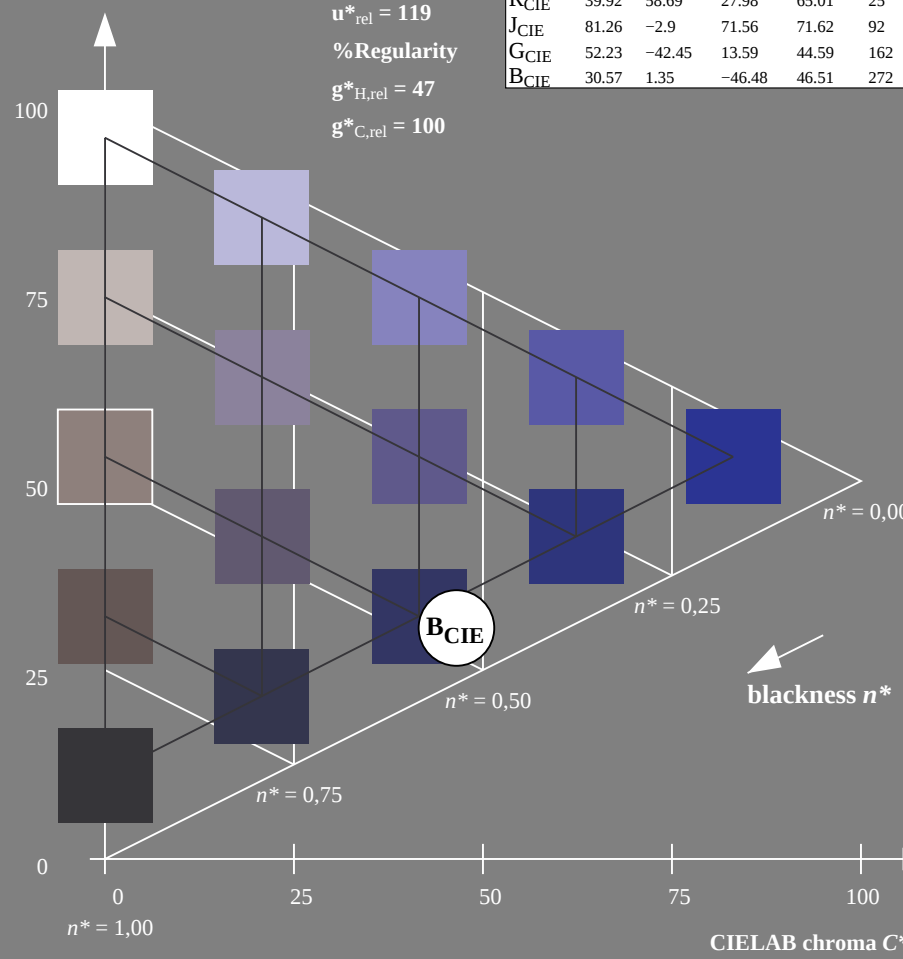
% Gamut

$u^*_{rel} = 119$

% Regularity

$g^*_{H,rel} = 47$

$g^*_{C,rel} = 100$



UE370-7, 5 step scales for constant CIELAB hue 272/360 = 0.755 (left)

Output: Colorimetric Reflective System ORS18

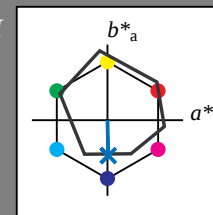
for hue  $h^* = lab \cdot h = 271/360 = 0.754$

LAB\*LCH, LAB\*NCH

D65: hue B

LCH\*Ma: 42 45 271

olv\*Ma: 0.0 0.49 1.0



ORS18; adapted (a) CIELAB data

|                  | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O <sub>Ma</sub>  | 47.94       | 65.37   | 50.52   | 82.62        | 38           |
| Y <sub>Ma</sub>  | 90.37       | -10.27  | 91.77   | 92.34        | 96           |
| L <sub>Ma</sub>  | 50.9        | -62.79  | 34.95   | 71.87        | 151          |
| C <sub>Ma</sub>  | 58.62       | -30.35  | -45.01  | 54.3         | 236          |
| V <sub>Ma</sub>  | 25.71       | 31.11   | -44.42  | 54.24        | 305          |
| M <sub>Ma</sub>  | 48.13       | 75.27   | -8.35   | 75.73        | 354          |
| N <sub>Ma</sub>  | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>  | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub> | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub> | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub> | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub> | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

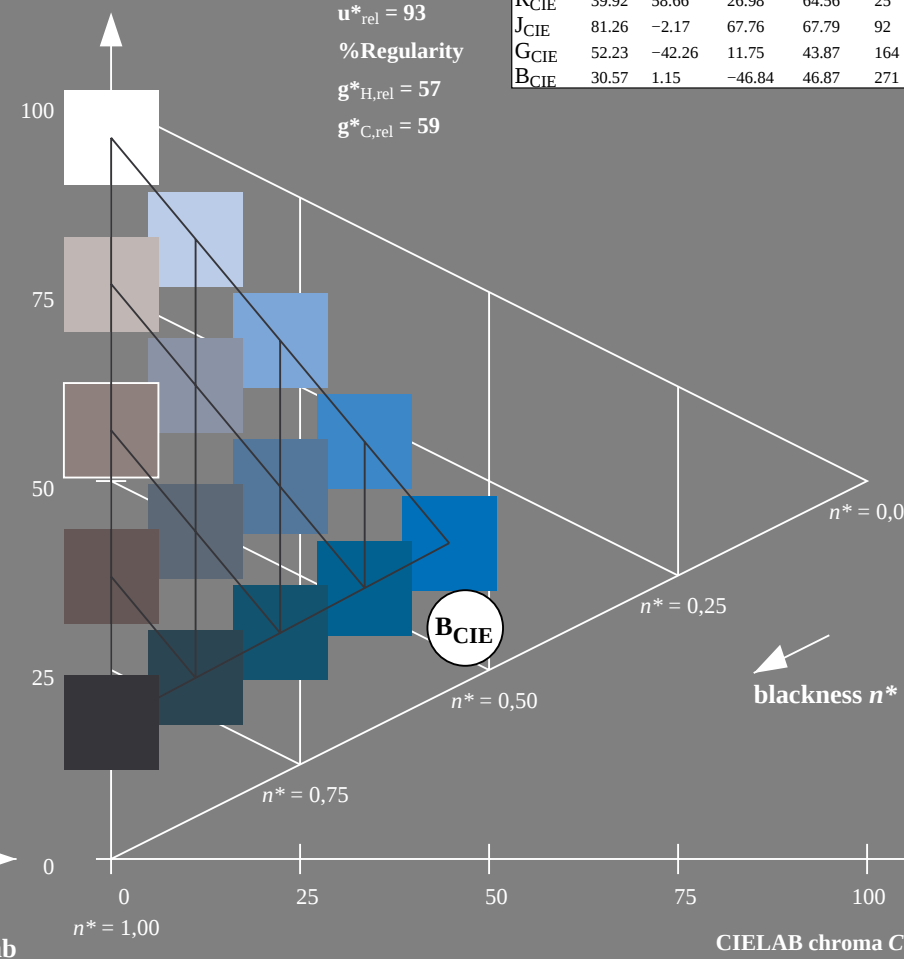
% Gamut

$u^*_{rel} = 93$

% Regularity

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

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



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

BAM-test chart UE37; Colorimetric systems NRS11 & ORS18

D65: Coordinate systems of 5 step colour scales for 10 hues

input:  $cmY0^* setcmykcolor$

output: no change compared to input