

# Input: Colorimetric Reflective System NCS11

for hue  $h^* = lab^*h = 24/360 = 0.066$

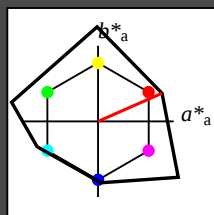
$lab^*ich$  and  $lab^*nch$

D65: hue R

LCH\*Ma: 47 92 24

rgb\*Ma: 1.0 0.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 149$

%Regularity

$g^*_{H,rel} = 46$

$g^*_{C,rel} = 65$

## NCS11; adapted (a) CIELAB data

|        | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------|-------------|---------|---------|--------------|--------------|
| RMa    | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa    | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa    | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50BMa | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| BMa    | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50RMa | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| NMa    | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| WMa    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE   | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

# Output: Colorimetric Reflective System MRS18

for hue  $h^* = lab^*h = 30/360 = 0.083$

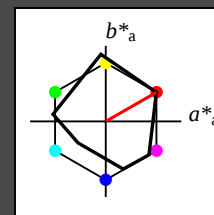
$lab^*ich$  and  $lab^*nch$

D65: hue R

LCH\*Ma: 50 77 30

rgb\*Ma: 1.0 0.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 91$

%Regularity

$g^*_{H,rel} = 41$

$g^*_{C,rel} = 52$

## MRS18; adapted (a) CIELAB data

|        | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------|-------------|---------|---------|--------------|--------------|
| RMa    | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| JMa    | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| GMa    | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50BMa | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| BMa    | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50RMa | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| NMa    | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| WMa    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE   | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE   | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE   | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE   | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

0,25

$n^* = 0,50$

chromaticness  $c^*$

blackness  $n^*$

$n^* = 0,00$

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

$n^* = 0,75$

$n^* = 0,50$

$n^* = 0,25$

blackness  $n^*$

$n^* = 0,00$

chromaticness  $c^*$

TE680-7, 3 step scales for constant CIELAB hue 24/360 = 0.066 (left)

5 step scales for constant CIELAB hue 30/360 = 0.083 (right)

BAM-test chart TE68; Colorimetric systems NCS11a & MRS18 input:  $olv^* setrgbcolor$

D65: 3 and 5 step colour scales for 10 hues

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

### Input: Colorimetric Reflective System NCS11

for hue  $h^* = lab^*h = 91/360 = 0.252$

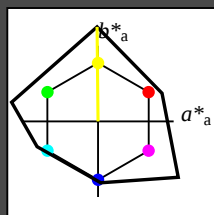
$lab^*ich$  and  $lab^*nch$

D65: hue J

LCH\*Ma: 91 125 91

rgb\*Ma: 1.0 1.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 149$

%Regularity

$g^*_{H,rel} = 46$

$g^*_{C,rel} = 65$

### NCS11; adapted (a) CIELAB data

|        | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------|-------------|---------|---------|--------------|--------------|
| RMa    | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa    | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa    | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50BMa | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| BMa    | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50RMa | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| NMa    | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| WMa    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE   | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

### Output: Colorimetric Reflective System MRS18

for hue  $h^* = lab^*h = 94/360 = 0.261$

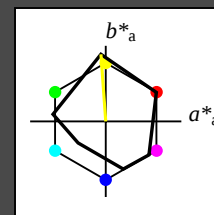
$lab^*ich$  and  $lab^*nch$

D65: hue J

LCH\*Ma: 91 89 94

rgb\*Ma: 1.0 1.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 91$

%Regularity

$g^*_{H,rel} = 41$

$g^*_{C,rel} = 52$

### MRS18; adapted (a) CIELAB data

|        | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------|-------------|---------|---------|--------------|--------------|
| RMa    | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| JMa    | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| GMa    | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50BMa | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| BMa    | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50RMa | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| NMa    | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| WMa    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE   | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE   | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE   | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE   | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

0,25

$n^* = 0,50$

chromaticness  $c^*$

$n^* = 0,00$

blackness  $n^*$

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

0,25

$n^* = 0,50$

chromaticness  $c^*$

$n^* = 0,25$

blackness  $n^*$

$n^* = 0,00$

TE680-7, 3 step scales for constant CIELAB hue 91/360 = 0.252 (left)

5 step scales for constant CIELAB hue 94/360 = 0.261 (right)

BAM-test chart TE68; Colorimetric systems NCS11a & MRS18 input:  $olv^* setrgbcolor$

D65: 3 and 5 step colour scales for 10 hues

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

### Input: Colorimetric Reflective System NCS11

for hue  $h^* = \text{lab}^*h = 167/360 = 0.465$

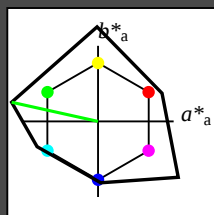
$\text{lab}^*ich$  and  $\text{lab}^*nch$

D65: hue G

LCH\*Ma: 63 117 167

rgb\*Ma: 0.0 1.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{\text{rel}} = 149$

%Regularity

$g^*_{H,\text{rel}} = 46$

$g^*_{C,\text{rel}} = 65$

| NCS11; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa                            | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa                            | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50BMa                         | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| BMa                            | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50RMa                         | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| NMa                            | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| WMa                            | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE                           | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE                           | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE                           | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE                           | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

### Output: Colorimetric Reflective System MRS18

for hue  $h^* = \text{lab}^*h = 172/360 = 0.479$

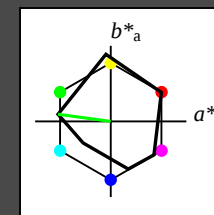
$\text{lab}^*ich$  and  $\text{lab}^*nch$

D65: hue G

LCH\*Ma: 52 70 172

rgb\*Ma: 0.0 1.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{\text{rel}} = 91$

%Regularity

$g^*_{H,\text{rel}} = 41$

$g^*_{C,\text{rel}} = 52$

| MRS18; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| JMa                            | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| GMa                            | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50BMa                         | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| BMa                            | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50RMa                         | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| NMa                            | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| WMa                            | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE                           | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE                           | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE                           | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE                           | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

0,25

$n^* = 0,50$

chromaticness  $c^*$

$n^* = 0,00$

blackness  $n^*$

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  $c^*$

TE680-7, 3 step scales for constant CIELAB hue 167/360 = 0.465 (left)

5 step scales for constant CIELAB hue 172/360 = 0.479 (right)

BAM-test chart TE68; Colorimetric systems NCS11a & MRS18 input:  $\text{olv}^* \text{setrgbcolor}$

D65: 3 and 5 step colour scales for 10 hues

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

### Input: Colorimetric Reflective System NCS11

for hue  $h^* = lab^*h = 203/360 = 0.563$

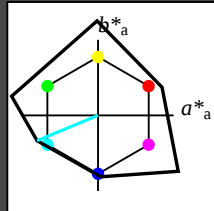
$lab^*ich$  and  $lab^*nch$

D65: hue G50B

LCH\*Ma: 59 87 203

rgb\*Ma: 0.0 1.0 1.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 149$

%Regularity

$g^*_{H,rel} = 46$

$g^*_{C,rel} = 65$

| NCS11; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa                            | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa                            | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50B <sub>Ma</sub>             | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| B <sub>Ma</sub>                | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50R <sub>Ma</sub>             | 44.06       | 106.09  | -73.93  | 129.32       | 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            |
| RCIE                           | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE                           | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE                           | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE                           | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

### Output: Colorimetric Reflective System MRS18

for hue  $h^* = lab^*h = 218/360 = 0.605$

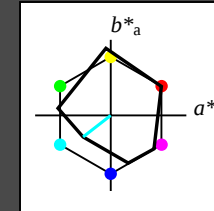
$lab^*ich$  and  $lab^*nch$

D65: hue G50B

LCH\*Ma: 45 46 218

rgb\*Ma: 0.0 1.0 1.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 91$

%Regularity

$g^*_{H,rel} = 41$

$g^*_{C,rel} = 52$

| MRS18; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| JMa                            | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| GMa                            | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50B <sub>Ma</sub>             | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| B <sub>Ma</sub>                | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50R <sub>Ma</sub>             | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| N <sub>Ma</sub>                | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>                | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE                           | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE                           | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE                           | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE                           | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

$n^* = 0,50$

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  $c^*$

TE680-7, 3 step scales for constant CIELAB hue 203/360 = 0.563 (left)

5 step scales for constant CIELAB hue 218/360 = 0.605 (right)

BAM-test chart TE68; Colorimetric systems NCS11a & MRS18 input:  $olv^* setrgbcolor$

D65: 3 and 5 step colour scales for 10 hues

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

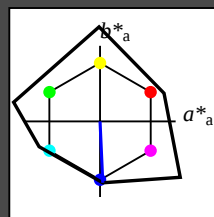
# Input: Colorimetric Reflective System NCS11

for hue  $h^* = lab^*h = 273/360 = 0.757$

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

D65: hue B  
LCH\*Ma: 49 81 273  
rgb\*Ma: 0.0 0.0 1.0

triangle lightness  $t^*$



%Gamut  
 $u^*_{rel} = 149$   
%Regularity  
 $g^*_{H,rel} = 46$   
 $g^*_{C,rel} = 65$

| NCS11; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa                            | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa                            | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50BMa                         | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| BMa                            | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50RMa                         | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| NMa                            | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| WMa                            | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE                           | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE                           | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE                           | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE                           | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

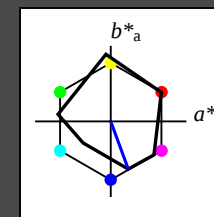
# Output: Colorimetric Reflective System MRS18

for hue  $h^* = lab^*h = 290/360 = 0.806$

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

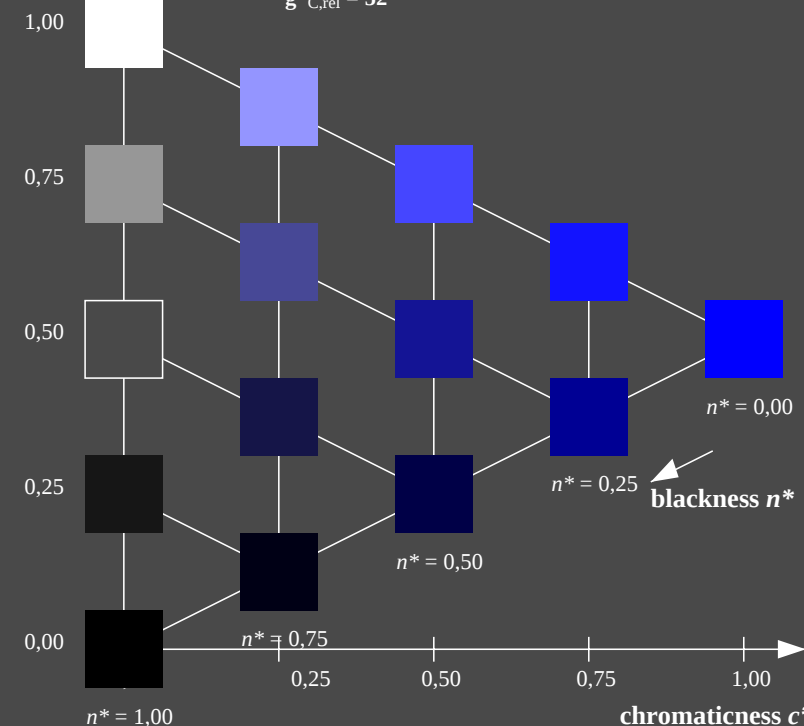
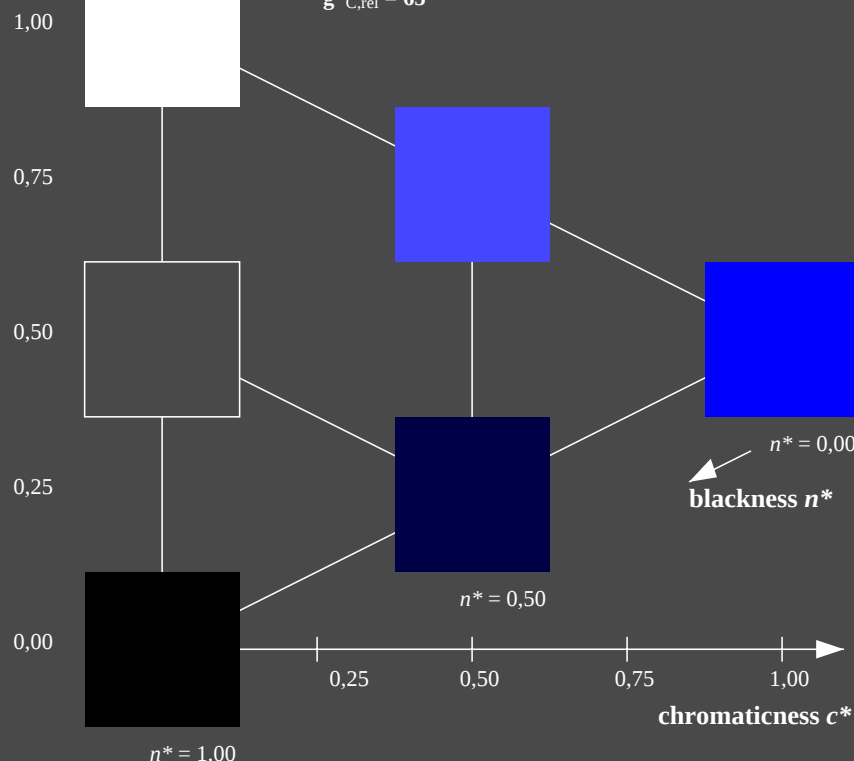
D65: hue B  
LCH\*Ma: 37 67 290  
rgb\*Ma: 0.0 0.0 1.0

triangle lightness  $t^*$



%Gamut  
 $u^*_{rel} = 91$   
%Regularity  
 $g^*_{H,rel} = 41$   
 $g^*_{C,rel} = 52$

| MRS18; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| JMa                            | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| GMa                            | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50BMa                         | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| BMa                            | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50RMa                         | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| NMa                            | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| WMa                            | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE                           | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE                           | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE                           | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE                           | 30.57       | 1.15    | -46.84  | 46.87        | 271          |



TE680-7, 3 step scales for constant CIELAB hue 273/360 = 0.757 (left)

5 step scales for constant CIELAB hue 290/360 = 0.806 (right)

BAM-test chart TE68; Colorimetric systems NCS11a & MRS18 input:  $olv^* setrgbcolor$   
D65: 3 and 5 step colour scales for 10 hues

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

### Input: Colorimetric Reflective System NCS11

for hue  $h^* = \text{lab}^*h = 325/360 = 0.903$

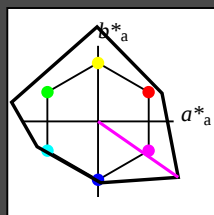
$\text{lab}^*ich$  and  $\text{lab}^*nch$

D65: hue B50R

LCH\*Ma: 44 129 325

rgb\*Ma: 1.0 0.0 1.0

triangle lightness  $t^*$



%Gamut

$u^*_{\text{rel}} = 149$

%Regularity

$g^*_{H,\text{rel}} = 46$

$g^*_{C,\text{rel}} = 65$

| NCS11; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa                            | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa                            | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50BMa                         | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| BMa                            | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50RMa                         | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| NMa                            | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| WMa                            | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE                           | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE                           | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE                           | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE                           | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

### Output: Colorimetric Reflective System MRS18

for hue  $h^* = \text{lab}^*h = 322/360 = 0.895$

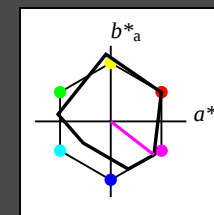
$\text{lab}^*ich$  and  $\text{lab}^*nch$

D65: hue B50R

LCH\*Ma: 35 72 322

rgb\*Ma: 1.0 0.0 1.0

triangle lightness  $t^*$



%Gamut

$u^*_{\text{rel}} = 91$

%Regularity

$g^*_{H,\text{rel}} = 41$

$g^*_{C,\text{rel}} = 52$

| MRS18; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| JMa                            | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| GMa                            | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50BMa                         | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| BMa                            | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50RMa                         | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| NMa                            | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| WMa                            | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE                           | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE                           | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE                           | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE                           | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

0,25

$n^* = 0,50$

chromaticness  $c^*$

$n^* = 0,00$

blackness  $n^*$

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  $c^*$

TE680-7, 3 step scales for constant CIELAB hue 325/360 = 0.903 (left)

5 step scales for constant CIELAB hue 322/360 = 0.895 (right)

BAM-test chart TE68; Colorimetric systems NCS11a & MRS18 input:  $\text{olv}^* \text{setrgbcolor}$

D65: 3 and 5 step colour scales for 10 hues

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

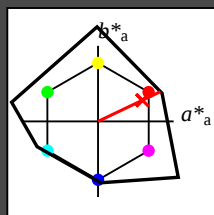
# Input: Colorimetric Reflective System NCS11

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

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

D65: hue R  
LCH\*Ma: 48 91 25  
rgb\*Ma: 1.0 0.02 0.0

triangle lightness  $t^*$



%Gamut  
 $u^*_{rel} = 149$   
%Regularity  
 $g^*_{H,rel} = 46$   
 $g^*_{C,rel} = 65$

| NCS11; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa                            | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa                            | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50BMa                         | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| BMa                            | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50RMa                         | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| NMa                            | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| WMa                            | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE                           | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE                           | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE                           | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE                           | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

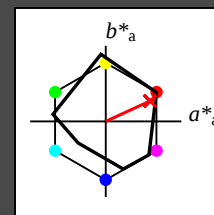
# Output: Colorimetric Reflective System MRS18

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

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

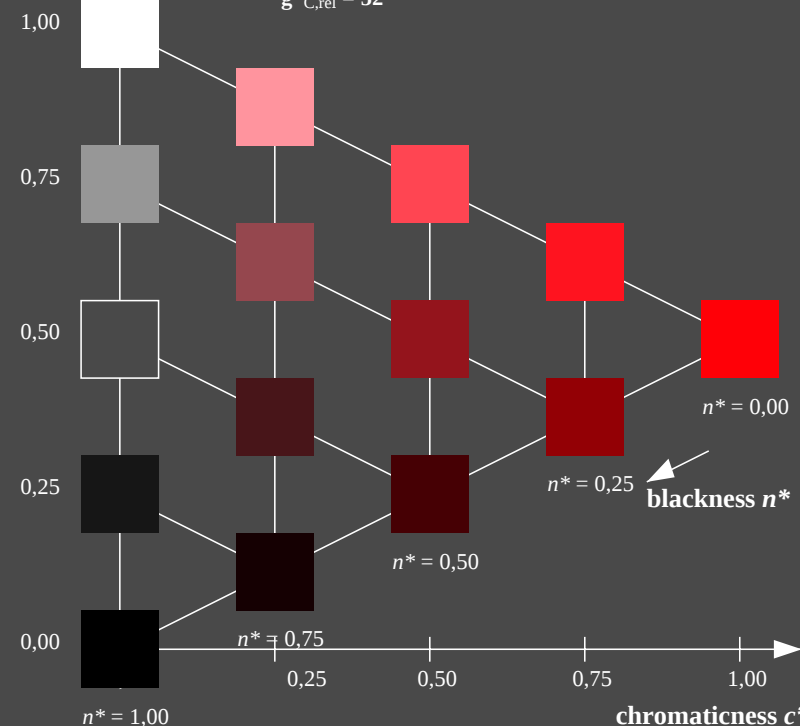
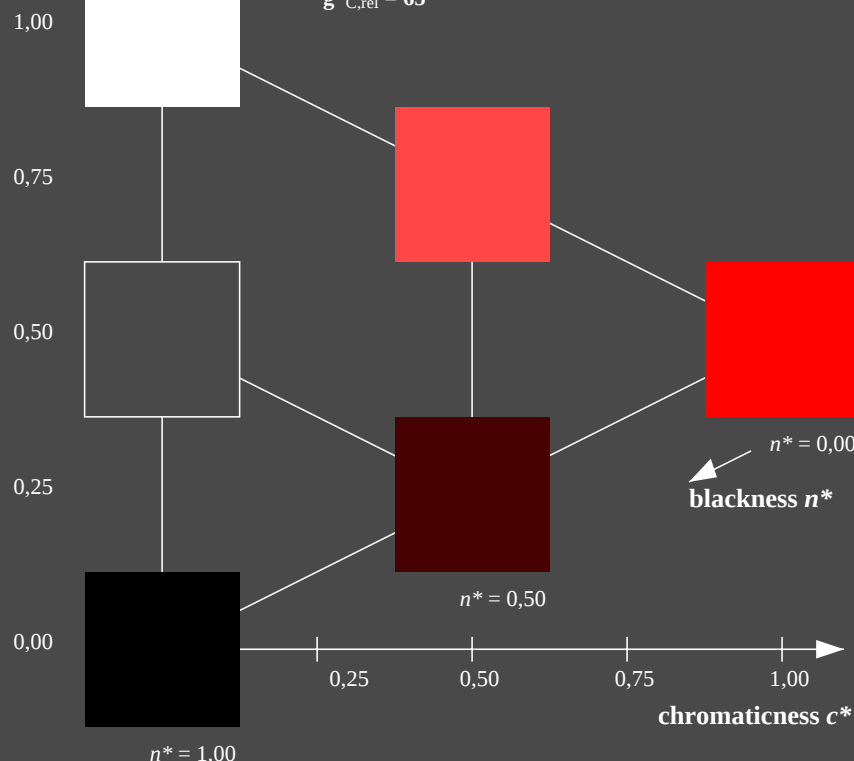
D65: hue R  
LCH\*Ma: 48 73 25  
rgb\*Ma: 1.0 0.0 0.1

triangle lightness  $t^*$



%Gamut  
 $u^*_{rel} = 91$   
%Regularity  
 $g^*_{H,rel} = 41$   
 $g^*_{C,rel} = 52$

| MRS18; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| JMa                            | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| GMa                            | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50BMa                         | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| BMa                            | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50RMa                         | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| NMa                            | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| WMa                            | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE                           | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE                           | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE                           | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE                           | 30.57       | 1.15    | -46.84  | 46.87        | 271          |



TE680-7, 3 step scales for constant CIELAB hue 25/360 = 0.071 (left)

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

BAM-test chart TE68; Colorimetric systems NCS11a & MRS18  
D65: 3 and 5 step colour scales for 10 hues

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

### Input: Colorimetric Reflective System NCS11

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

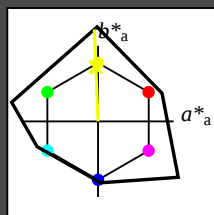
$lab^*ich$  and  $lab^*nch$

D65: hue J

LCH\*Ma: 90 122 92

rgb\*Ma: 0.97 1.0 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 149$

%Regularity

$g^*_{H,rel} = 46$

$g^*_{C,rel} = 65$

#### NCS11; adapted (a) CIELAB data

|        | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------|-------------|---------|---------|--------------|--------------|
| RMa    | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa    | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa    | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50BMa | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| BMa    | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50RMa | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| NMa    | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| WMa    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE   | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

### Output: Colorimetric Reflective System MRS18

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

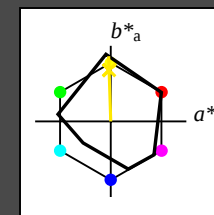
$lab^*ich$  and  $lab^*nch$

D65: hue J

LCH\*Ma: 89 86 92

rgb\*Ma: 1.0 0.95 0.0

triangle lightness  $t^*$



%Gamut

$u^*_{rel} = 91$

%Regularity

$g^*_{H,rel} = 41$

$g^*_{C,rel} = 52$

#### MRS18; adapted (a) CIELAB data

|        | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------|-------------|---------|---------|--------------|--------------|
| RMa    | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| JMa    | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| GMa    | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50BMa | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| BMa    | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50RMa | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| NMa    | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| WMa    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE   | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE   | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE   | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE   | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

0,25

$n^* = 0,50$

chromaticness  $c^*$

$n^* = 0,00$

blackness  $n^*$

1,00

0,75

0,50

0,25

0,00

$n^* = 1,00$

0,25

$n^* = 0,50$

$n^* = 0,25$

$n^* = 0,00$

blackness  $n^*$

chromaticness  $c^*$

TE680-7, 3 step scales for constant CIELAB hue 92/360 = 0.256 (left)

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

BAM-test chart TE68; Colorimetric systems NCS11a & MRS18 input:  $olv^* setrgbcolor$

D65: 3 and 5 step colour scales for 10 hues

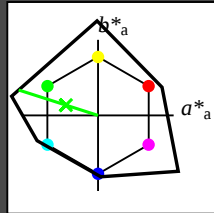
output:  $olv^* setrgbcolor / w^* setgray$

### Input: Colorimetric Reflective System NCS11

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

D65: hue G  
 LCH\*Ma: 65 110 162  
 rgb\*Ma: 0.08 1.0 0.0

triangle lightness  $t^*$



%Gamut  
 $u^*_{rel} = 149$   
 %Regularity  
 $g^*_{H,rel} = 46$   
 $g^*_{C,rel} = 65$

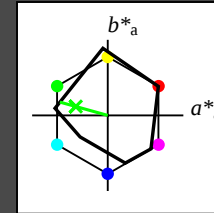
| NCS11; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa                            | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa                            | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50B <sub>Ma</sub>             | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| B <sub>Ma</sub>                | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50R <sub>Ma</sub>             | 44.06       | 106.09  | -73.93  | 129.32       | 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            |
| RCIE                           | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE                           | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE                           | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE                           | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

### Output: Colorimetric Reflective System MRS18

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

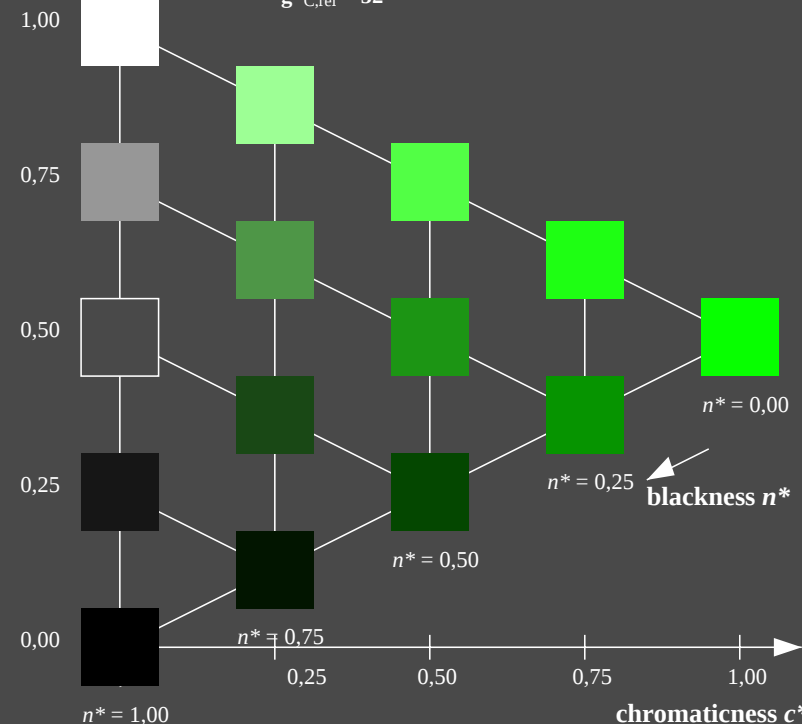
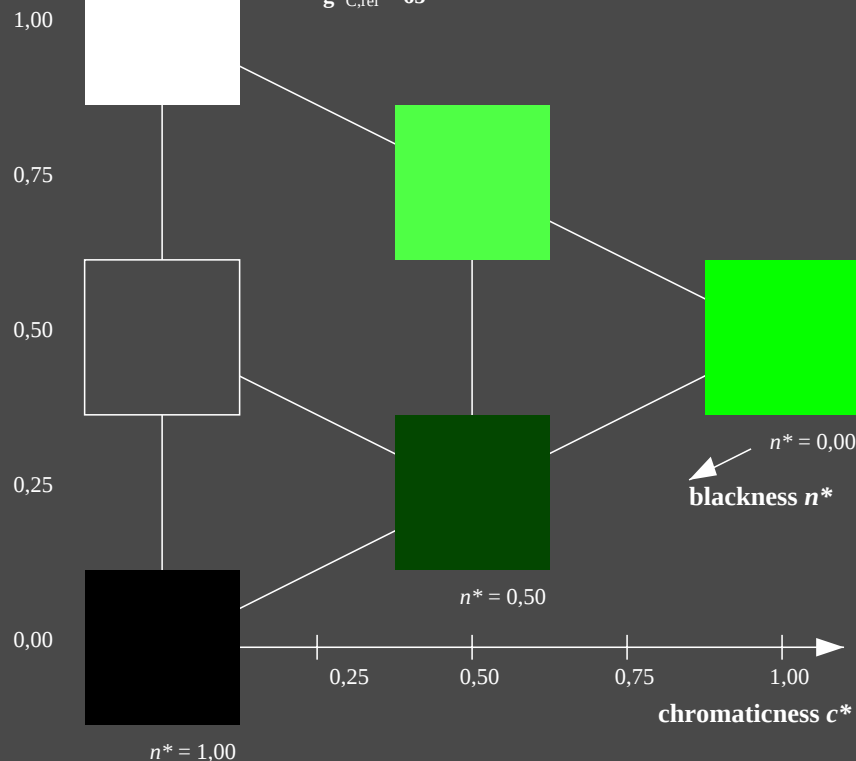
D65: hue G  
 LCH\*Ma: 56 66 164  
 rgb\*Ma: 0.1 1.0 0.0

triangle lightness  $t^*$



%Gamut  
 $u^*_{rel} = 91$   
 %Regularity  
 $g^*_{H,rel} = 41$   
 $g^*_{C,rel} = 52$

| MRS18; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| JMa                            | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| GMa                            | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50B <sub>Ma</sub>             | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| B <sub>Ma</sub>                | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50R <sub>Ma</sub>             | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| N <sub>Ma</sub>                | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>                | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE                           | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE                           | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE                           | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE                           | 30.57       | 1.15    | -46.84  | 46.87        | 271          |



TE680-7, 3 step scales for constant CIELAB hue 162/360 = 0.451 (left)

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

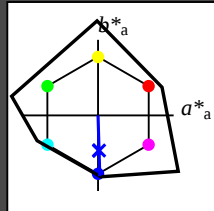
BAM-test chart TE68; Colorimetric systems NCS11a & MRS18 input: `olv* setrgbcolor`  
 D65: 3 and 5 step colour scales for 10 hues output: `olv* setrgbcolor / w* setgray`

# Input: Colorimetric Reflective System NCS11

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

D65: hue B  
LCH\*Ma: 49 80 272  
rgb\*Ma: 0.0 0.02 1.0

triangle lightness  $t^*$



%Gamut  
 $u^*_{rel} = 149$   
%Regularity  
 $g^*_{H,rel} = 46$   
 $g^*_{C,rel} = 65$

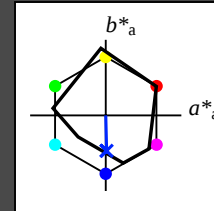
| NCS11; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa                            | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa                            | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50BMa                         | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| BMa                            | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50RMa                         | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| NMa                            | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| WMa                            | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE                           | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE                           | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE                           | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE                           | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

# Output: Colorimetric Reflective System MRS18

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

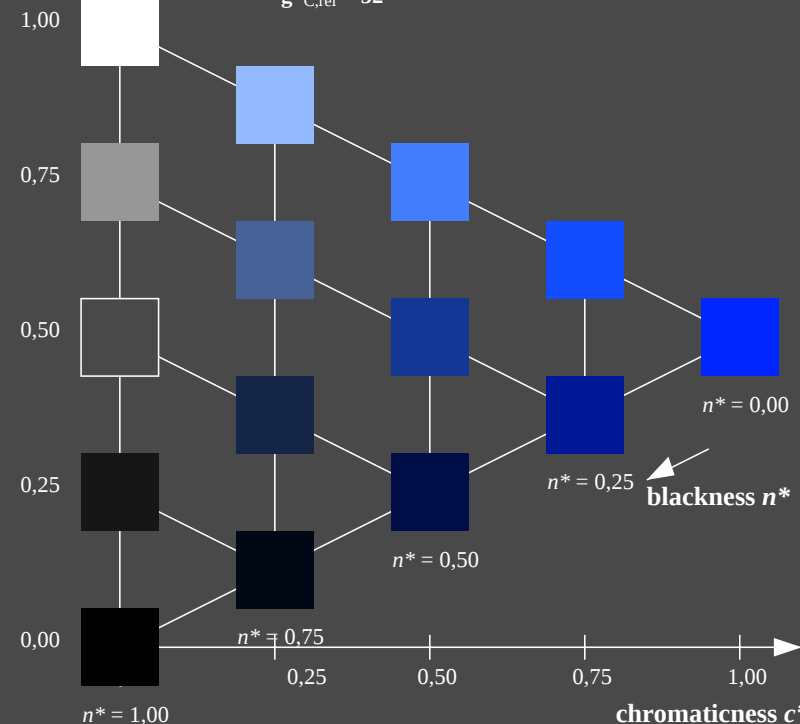
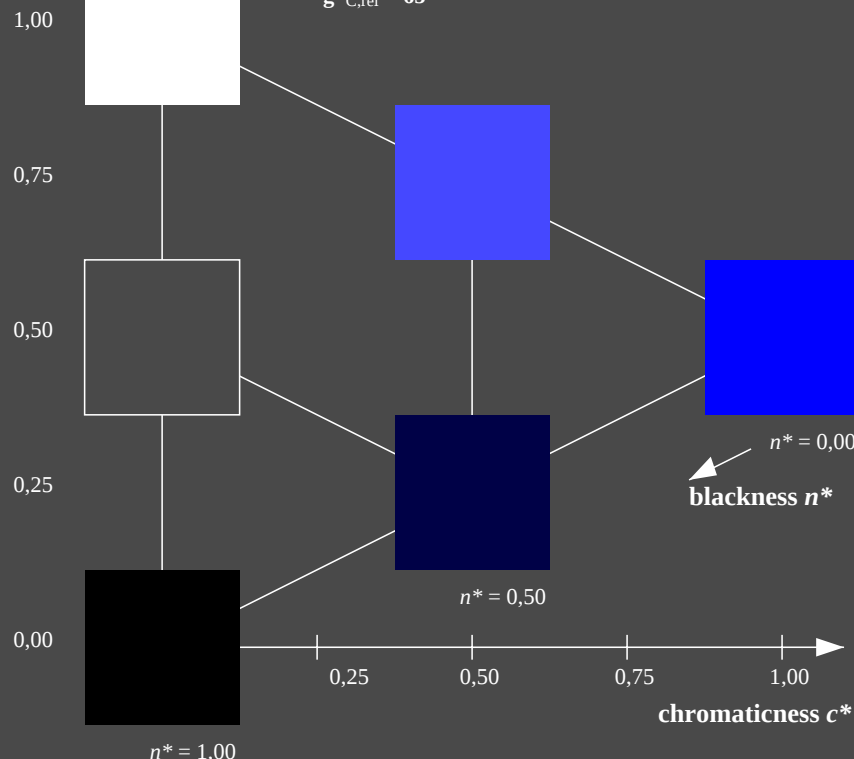
D65: hue B  
LCH\*Ma: 40 50 271  
rgb\*Ma: 0.0 0.37 1.0

triangle lightness  $t^*$



%Gamut  
 $u^*_{rel} = 91$   
%Regularity  
 $g^*_{H,rel} = 41$   
 $g^*_{C,rel} = 52$

| MRS18; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| JMa                            | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| GMa                            | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50BMa                         | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| BMa                            | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50RMa                         | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| NMa                            | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| WMa                            | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| RCIE                           | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE                           | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE                           | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE                           | 30.57       | 1.15    | -46.84  | 46.87        | 271          |



TE680-7, 3 step scales for constant CIELAB hue 272/360 = 0.755 (left)

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

BAM-test chart TE68; Colorimetric systems NCS11a & MRS18 input:  $olv^* setrgbcolor$   
D65: 3 and 5 step colour scales for 10 hues output:  $olv^* setrgbcolor / w^* setgray$