

# Input: Colorimetric Reflective System NCS11

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

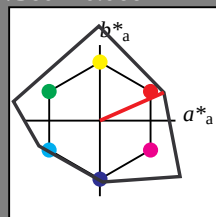
$lab^*tch$  and  $lab^*nch$

D65: hue R

LCH\*Ma: 47 92 24

rgb\*Ma: 1.0 0.0 0.0

triangle lightness  $t^*$



relative Inform. Technology (IT)

|         |       |      |       |       |
|---------|-------|------|-------|-------|
| olvi3*  | 1.0   | 1.0  | 1.0   | (1.0) |
| cmyn3*  | 0.0   | 0.0  | 0.0   | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0   | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0   | (0.0) |
| LAB*Lab | 95.41 | 0.0  | -0.01 |       |
| LAB*Lab | 95.41 | 0.0  | 0.0   |       |
| LAB*TCh | 99.99 | 0.01 | 0.0   |       |

relative CIELAB lab\*

|                              |     |     |     |  |
|------------------------------|-----|-----|-----|--|
| lab*lab                      | 1.0 | 0.0 | 0.0 |  |
| lab*tch                      | 0.0 | 1.0 | 0.0 |  |
| lab*nch                      | 0.0 | 0.0 | 1.0 |  |
| relative Natural Colour (NC) | 0.0 | 0.0 | 0.0 |  |
| lab*trj                      | 0.0 | 0.0 | 0.0 |  |
| lab*tce                      | 1.0 | 0.0 | 0.0 |  |
| lab*nce                      | 0.0 | 0.0 | 1.0 |  |

relative Inform. Technology (IT)

|         |       |      |      |       |
|---------|-------|------|------|-------|
| olvi3*  | 0.75  | 0.75 | 0.75 | (1.0) |
| cmyn3*  | 0.25  | 0.25 | 0.25 | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0  | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0  | (0.0) |
| LAB*Lab | 74.31 | 0.02 | 0.0  |       |
| LAB*Lab | 74.31 | 0.02 | 0.0  |       |
| LAB*TCh | 75.00 | 0.01 | 0.0  |       |

relative CIELAB lab\*

|                              |       |       |        |  |
|------------------------------|-------|-------|--------|--|
| lab*lab                      | 0.857 | 0.229 | 0.101  |  |
| lab*tch                      | 0.875 | 0.25  | 0.066  |  |
| lab*nch                      | 0.0   | 0.25  | 0.066  |  |
| relative Natural Colour (NC) | 0.0   | 0.25  | 0.066  |  |
| lab*trj                      | 0.857 | 0.25  | -0.005 |  |
| lab*tce                      | 0.875 | 0.25  | 0.996  |  |
| lab*nce                      | 0.0   | 0.25  | 0.996  |  |

relative Inform. Technology (IT)

|         |       |      |      |       |
|---------|-------|------|------|-------|
| olvi3*  | 0.75  | 0.75 | 0.75 | (1.0) |
| cmyn3*  | 0.25  | 0.25 | 0.25 | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0  | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0  | (0.0) |
| LAB*Lab | 53.21 | 0.04 | 0.0  |       |
| LAB*Lab | 53.21 | 0.04 | 0.0  |       |
| LAB*TCh | 50.00 | 0.01 | 0.0  |       |

relative CIELAB lab\*

|                              |       |       |        |  |
|------------------------------|-------|-------|--------|--|
| lab*lab                      | 0.607 | 0.229 | 0.101  |  |
| lab*tch                      | 0.625 | 0.25  | 0.066  |  |
| lab*nch                      | 0.0   | 0.25  | 0.066  |  |
| relative Natural Colour (NC) | 0.0   | 0.25  | 0.066  |  |
| lab*trj                      | 0.607 | 0.25  | -0.005 |  |
| lab*tce                      | 0.625 | 0.25  | 0.996  |  |
| lab*nce                      | 0.0   | 0.25  | 0.996  |  |

relative Inform. Technology (IT)

|         |       |      |     |       |
|---------|-------|------|-----|-------|
| olvi3*  | 0.5   | 0.5  | 0.5 | (0.0) |
| cmyn3*  | 0.5   | 0.5  | 0.5 | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0 | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0 | (0.0) |
| LAB*Lab | 32.11 | 0.01 | 0.0 |       |
| LAB*Lab | 32.11 | 0.01 | 0.0 |       |
| LAB*TCh | 50.00 | 0.01 | 0.0 |       |

relative CIELAB lab\*

|                              |       |       |        |  |
|------------------------------|-------|-------|--------|--|
| lab*lab                      | 0.357 | 0.229 | 0.101  |  |
| lab*tch                      | 0.375 | 0.25  | 0.066  |  |
| lab*nch                      | 0.0   | 0.25  | 0.066  |  |
| relative Natural Colour (NC) | 0.0   | 0.25  | 0.066  |  |
| lab*trj                      | 0.357 | 0.25  | -0.005 |  |
| lab*tce                      | 0.375 | 0.25  | 0.996  |  |
| lab*nce                      | 0.0   | 0.25  | 0.996  |  |

relative Inform. Technology (IT)

|         |       |      |      |       |
|---------|-------|------|------|-------|
| olvi3*  | 0.25  | 0.25 | 0.25 | (0.0) |
| cmyn3*  | 0.75  | 0.75 | 0.75 | (1.0) |
| olvi4*  | 1.0   | 1.0  | 1.0  | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0  | (0.0) |
| LAB*Lab | 32.11 | 0.01 | 0.0  |       |
| LAB*Lab | 32.11 | 0.01 | 0.0  |       |
| LAB*TCh | 50.00 | 0.01 | 0.0  |       |

relative CIELAB lab\*

|                              |       |       |        |  |
|------------------------------|-------|-------|--------|--|
| lab*lab                      | 0.107 | 0.229 | 0.101  |  |
| lab*tch                      | 0.125 | 0.25  | 0.066  |  |
| lab*nch                      | 0.0   | 0.25  | 0.066  |  |
| relative Natural Colour (NC) | 0.0   | 0.25  | 0.066  |  |
| lab*trj                      | 0.107 | 0.25  | -0.005 |  |
| lab*tce                      | 0.125 | 0.25  | 0.996  |  |
| lab*nce                      | 0.0   | 0.25  | 0.996  |  |

relative Inform. Technology (IT)

|         |       |      |      |       |
|---------|-------|------|------|-------|
| olvi3*  | 0.0   | 0.0  | 0.0  | (1.0) |
| cmyn3*  | 1.0   | 1.0  | 1.0  | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0  | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0  | (0.0) |
| LAB*Lab | 11.01 | 0.07 | 0.01 |       |
| LAB*Lab | 11.01 | 0.07 | 0.01 |       |
| LAB*TCh | 0.01  | 0.01 | 0.0  |       |

relative CIELAB lab\*

|                              |        |       |        |  |
|------------------------------|--------|-------|--------|--|
| lab*lab                      | 0.0107 | 0.229 | 0.101  |  |
| lab*tch                      | 0.0125 | 0.25  | 0.066  |  |
| lab*nch                      | 0.0    | 0.25  | 0.066  |  |
| relative Natural Colour (NC) | 0.0    | 0.25  | 0.066  |  |
| lab*trj                      | 0.0107 | 0.25  | -0.005 |  |
| lab*tce                      | 0.0125 | 0.25  | 0.996  |  |
| lab*nce                      | 0.0    | 0.25  | 0.996  |  |

relative Inform. Technology (IT)

|         |       |      |      |       |
|---------|-------|------|------|-------|
| olvi3*  | 0.0   | 0.0  | 0.0  | (1.0) |
| cmyn3*  | 1.0   | 1.0  | 1.0  | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0  | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0  | (0.0) |
| LAB*Lab | 11.01 | 0.07 | 0.01 |       |
| LAB*Lab | 11.01 | 0.07 | 0.01 |       |
| LAB*TCh | 0.01  | 0.01 | 0.0  |       |

relative CIELAB lab\*

|                              |     |      |     |  |
|------------------------------|-----|------|-----|--|
| lab*lab                      | 0.0 | 0.25 | 0.0 |  |
| lab*tch                      | 0.0 | 0.25 | 0.0 |  |
| lab*nch                      | 0.0 | 0.25 | 0.0 |  |
| relative Natural Colour (NC) | 0.0 | 0.25 | 0.0 |  |
| lab*trj                      | 0.0 | 0.25 | 0.0 |  |
| lab*tce                      | 0.0 | 0.25 | 0.0 |  |
| lab*nce                      | 0.0 | 0.25 | 0.0 |  |

relative Inform. Technology (IT)

|         |       |      |      |       |
|---------|-------|------|------|-------|
| olvi3*  | 0.0   | 0.0  | 0.0  | (1.0) |
| cmyn3*  | 1.0   | 1.0  | 1.0  | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0  | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0  | (0.0) |
| LAB*Lab | 11.01 | 0.07 | 0.01 |       |
| LAB*Lab | 11.01 | 0.07 | 0.01 |       |
| LAB*TCh | 0.01  | 0.01 | 0.0  |       |

relative CIELAB lab\*

|                              |     |      |     |  |
|------------------------------|-----|------|-----|--|
| lab*lab                      | 0.0 | 0.25 | 0.0 |  |
| lab*tch                      | 0.0 | 0.25 | 0.0 |  |
| lab*nch                      | 0.0 | 0.25 | 0.0 |  |
| relative Natural Colour (NC) | 0.0 | 0.25 | 0.0 |  |
| lab*trj                      | 0.0 | 0.25 | 0.0 |  |
| lab*tce                      | 0.0 | 0.25 | 0.0 |  |
| lab*nce                      | 0.0 | 0.25 | 0.0 |  |

relative Inform. Technology (IT)

|         |       |      |      |       |
|---------|-------|------|------|-------|
| olvi3*  | 0.0   | 0.0  | 0.0  | (1.0) |
| cmyn3*  | 1.0   | 1.0  | 1.0  | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0  | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0  | (0.0) |
| LAB*Lab | 11.01 | 0.07 | 0.01 |       |
| LAB*Lab | 11.01 | 0.07 | 0.01 |       |
| LAB*TCh | 0.01  | 0.01 | 0.0  |       |

relative CIELAB lab\*

|                              |     |      |     |  |
|------------------------------|-----|------|-----|--|
| lab*lab                      | 0.0 | 0.25 | 0.0 |  |
| lab*tch                      | 0.0 | 0.25 | 0.0 |  |
| lab*nch                      | 0.0 | 0.25 | 0.0 |  |
| relative Natural Colour (NC) | 0.0 | 0.25 | 0.0 |  |
| lab*trj                      | 0.0 | 0.25 | 0.0 |  |
| lab*tce                      | 0.0 | 0.25 | 0.0 |  |
| lab*nce                      | 0.0 | 0.25 | 0.0 |  |

relative Inform. Technology (IT)

|         |       |      |      |       |
|---------|-------|------|------|-------|
| olvi3*  | 0.0   | 0.0  | 0.0  | (1.0) |
| cmyn3*  | 1.0   | 1.0  | 1.0  | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0  | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0  | (0.0) |
| LAB*Lab | 11.01 | 0.07 | 0.01 |       |
| LAB*Lab | 11.01 | 0.07 | 0.01 |       |
| LAB*TCh | 0.01  | 0.01 | 0.0  |       |

relative CIELAB lab\*

|                              |     |      |     |  |
|------------------------------|-----|------|-----|--|
| lab*lab                      | 0.0 | 0.25 | 0.0 |  |
| lab*tch                      | 0.0 | 0.25 | 0.0 |  |
| lab*nch                      | 0.0 | 0.25 | 0.0 |  |
| relative Natural Colour (NC) | 0.0 | 0.25 | 0.0 |  |
| lab*trj                      | 0.0 | 0.25 | 0.0 |  |
| lab*tce                      | 0.0 | 0.25 | 0.0 |  |
| lab*nce                      | 0.0 | 0.25 | 0.0 |  |

UE59-7, 5 step scales for constant CIELAB hue 24/360 = 0.066 (left)

BAM-test chart UE59; Colorimetric systems NCS11a & NCS11ainput: cmy0\* setcmykcolor

D65: 2 coordinate data of 5 step colour scales for 10 hues

# Output: Colorimetric Reflective System NCS11

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

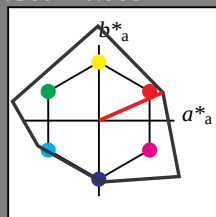
$lab^*tch$  and  $lab^*nch$

D65: hue R

LCH\*Ma: 47 92 24

rgb\*Ma: 1.0 0.0 0.0

triangle lightness  $t^*$



relative Inform. Technology (IT)

|         |       |      |       |       |
|---------|-------|------|-------|-------|
| olvi3*  | 1.0   | 1.0  | 1.0   | (1.0) |
| cmyn3*  | 0.0   | 0.0  | 0.0   | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0   | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0   | (0.0) |
| LAB*Lab | 95.41 | 0.0  | -0.01 |       |
| LAB*Lab | 95.41 | 0.0  | 0.0   |       |
| LAB*TCh | 99.99 | 0.01 | 0.0   |       |

relative CIELAB lab\*

|                              |     |     |     |  |
|------------------------------|-----|-----|-----|--|
| lab*lab                      | 1.0 | 0.0 | 0.0 |  |
| lab*tch                      | 0.0 | 1.0 | 0.0 |  |
| lab*nch                      | 0.0 | 0.0 | 1.0 |  |
| relative Natural Colour (NC) | 0.0 | 0.0 | 0.0 |  |
| lab*trj                      | 1.0 | 0.0 | 0.0 |  |
| lab*tce                      | 0.0 | 0.0 | 1.0 |  |
| lab*nce                      | 0.0 | 0.0 | 0.0 |  |

relative Inform. Technology (IT)

|         |       |      |      |       |
|---------|-------|------|------|-------|
| olvi3*  | 0.75  | 0.75 | 0.75 | (1.0) |
| cmyn3*  | 0.25  | 0.25 | 0.25 | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0  | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0  | (0.0) |
| LAB*Lab | 74.31 | 0.02 | 0.0  |       |
| LAB*Lab | 74.31 | 0.02 | 0.0  |       |
| LAB*TCh | 75.00 | 0.01 | 0.0  |       |

relative CIELAB lab\*

|                              |       |       |        |  |
|------------------------------|-------|-------|--------|--|
| lab*lab                      | 0.857 | 0.229 | 0.101  |  |
| lab*tch                      | 0.875 | 0.25  | 0.066  |  |
| lab*nch                      | 0.0   | 0.25  | 0.066  |  |
| relative Natural Colour (NC) | 0.0   | 0.25  | 0.066  |  |
| lab*trj                      | 0.857 | 0.25  | -0.005 |  |
| lab*tce                      | 0.875 | 0.25  | 0.996  |  |
| lab*nce                      | 0.0   | 0.25  | 0.996  |  |

relative Inform. Technology (IT)

|         |       |      |     |       |
|---------|-------|------|-----|-------|
| olvi3*  | 0.5   | 0.5  | 0.5 | (0.0) |
| cmyn3*  | 0.5   | 0.5  | 0.5 | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0 | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0 | (0.0) |
| LAB*Lab | 53.21 | 0.04 | 0.0 |       |
| LAB*Lab | 53.21 | 0.04 | 0.0 |       |
| LAB*TCh | 50.00 | 0.01 | 0.0 |       |

relative CIELAB lab\*

|                              |       |       |        |  |
|------------------------------|-------|-------|--------|--|
| lab*lab                      | 0.607 | 0.229 | 0.101  |  |
| lab*tch                      | 0.625 | 0.25  | 0.066  |  |
| lab*nch                      | 0.0   | 0.25  | 0.066  |  |
| relative Natural Colour (NC) | 0.0   | 0.25  | 0.066  |  |
| lab*trj                      | 0.607 | 0.25  | -0.005 |  |
| lab*tce                      | 0.625 | 0.25  | 0.996  |  |
| lab*nce                      | 0.0   | 0.25  | 0.996  |  |

relative Inform. Technology (IT)

|         |       |      |      |       |
|---------|-------|------|------|-------|
| olvi3*  | 0.25  | 0.25 | 0.25 | (0.0) |
| cmyn3*  | 0.75  | 0.75 | 0.75 | (1.0) |
| olvi4*  | 1.0   | 1.0  | 1.0  | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0  | (0.0) |
| LAB*Lab | 32.11 | 0.01 | 0.0  |       |
| LAB*Lab | 32.11 | 0.01 | 0.0  |       |
| LAB*TCh | 50.00 | 0.01 | 0.0  |       |

relative CIELAB lab\*

|                              |       |       |        |  |
|------------------------------|-------|-------|--------|--|
| lab*lab                      | 0.357 | 0.229 | 0.101  |  |
| lab*tch                      | 0.375 | 0.25  | 0.066  |  |
| lab*nch                      | 0.0   | 0.25  | 0.066  |  |
| relative Natural Colour (NC) | 0.0   | 0.25  | 0.066  |  |
| lab*trj                      | 0.357 | 0.25  | -0.005 |  |
| lab*tce                      | 0.375 | 0.25  | 0.996  |  |
| lab*nce                      | 0.0   | 0.25  | 0.996  |  |

relative Inform. Technology (IT)

|         |       |      |     |       |
|---------|-------|------|-----|-------|
| olvi3*  | 0.0   | 0.0  | 0.0 | (1.0) |
| cmyn3*  | 1.0   | 1.0  | 1.0 | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0 | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0 | (0.0) |
| LAB*Lab | 32.11 | 0.01 | 0.0 |       |
| LAB*Lab | 32.11 | 0.01 | 0.0 |       |
| LAB*TCh | 50.00 | 0.01 | 0.0 |       |

relative CIELAB lab\*

|                              |       |       |        |  |
|------------------------------|-------|-------|--------|--|
| lab*lab                      | 0.107 | 0.229 | 0.101  |  |
| lab*tch                      | 0.125 | 0.25  | 0.066  |  |
| lab*nch                      | 0.0   | 0.25  | 0.066  |  |
| relative Natural Colour (NC) | 0.0   | 0.25  | 0.066  |  |
| lab*trj                      | 0.107 | 0.25  | -0.005 |  |
| lab*tce                      | 0.125 | 0.25  | 0.996  |  |
| lab*nce                      | 0.0   | 0.25  | 0.996  |  |

relative Inform. Technology (IT)

|         |       |      |     |       |
|---------|-------|------|-----|-------|
| olvi3*  | 0.0   | 0.0  | 0.0 | (1.0) |
| cmyn3*  | 1.0   | 1.0  | 1.0 | (0.0) |
| olvi4*  | 1.0   | 1.0  | 1.0 | (1.0) |
| cmyn4*  | 0.0   | 0.0  | 0.0 | (0.0) |
| LAB*Lab | 32.11 | 0.01 | 0.0 |       |
| LAB*Lab | 32.11 | 0.01 | 0.0 |       |
| LAB*TCh | 50.00 | 0.01 | 0.0 |       |

relative CIELAB lab\*

|                              |     |      |     |  |
|------------------------------|-----|------|-----|--|
| lab*lab                      | 0.0 | 0.25 | 0.0 |  |
| lab*tch                      | 0.0 | 0.25 | 0.0 |  |
| lab*nch                      | 0.0 | 0.25 | 0.0 |  |
| relative Natural Colour (NC) | 0.0 | 0.25 | 0.0 |  |
| lab*trj                      | 0.0 | 0.25 | 0.0 |  |
| lab*tce                      | 0.0 | 0.25 | 0.0 |  |
| lab*nce                      | 0.0 | 0.25 | 0.0 |  |

See for similar files: <http://www.ps.bam.de/UE59/>  
Technical information: <http://www.ps.bam.de> Version 2.1, io=0.0

Page count: 2

www.ps.bam.de/UE59/10L/L59E01NP.PS/.PDF; start output  
N: No Output Linearization (OL) data in File (F), Startup (S) or Device (D)

BAM registration: 20060101-UE59/10L/L59E01NP.PS/.PDF  
application for evaluation and measurement of printer or monitor systems  
/UE59/ Form 2/10, Serie: 1/1, Page: 2

Input: Colorimetric Reflective System NCS11

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

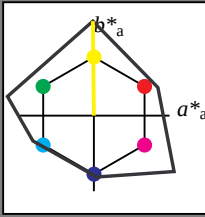
$lab^*tch$  and  $lab^*nch$

D65: hue J

LCH\*Ma: 91 125 91

rgb\*Ma: 1.0 1.0 0.0

triangle lightness  $t^*$



relative Inform. Technology (IT)  
olvi3\* 1.0 1.0 1.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 95.41 0.0 -0.01  
LAB\*LABa 95.41 0.0 0.0  
LAB\*TCMa 99.99 0.01 0.0

relative CIELAB lab\*  
lab\*lab 1.0 0.0 0.0  
lab\*tch 1.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 1.0 0.0 0.0  
lab\*tce 1.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.75 0.75 0.75 (1.0)  
cmyn3\* 0.25 0.25 0.25 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 74.31 0.02 0.0  
LAB\*LABa 74.31 0.02 0.0  
LAB\*TCMa 75.00 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.75 0.0 0.0  
lab\*tch 0.75 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.75 0.0 0.0  
lab\*tce 0.75 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.5 0.5 0.5 (0.0)  
cmyn3\* 0.5 0.5 0.5 (0.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 53.21 0.04 0.0  
LAB\*LABa 53.21 0.04 0.0  
LAB\*TCMa 50.00 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.5 0.0 0.0  
lab\*tch 0.5 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.5 0.0 0.0  
lab\*tce 0.5 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.25 0.25 0.25 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 32.11 0.08 0.0  
LAB\*LABa 32.11 0.08 0.0  
LAB\*TCMa 25.00 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.25 0.0 0.0  
lab\*tch 0.25 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.25 0.0 0.0  
lab\*tce 0.25 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TCMa 0.01 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 0.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.25 0.25 0.25 (1.0)  
cmyn3\* 0.75 0.75 0.75 (0.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 32.11 0.08 0.0  
LAB\*LABa 32.11 0.08 0.0  
LAB\*TCMa 25.00 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.25 0.0 0.0  
lab\*tch 0.25 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.25 0.0 0.0  
lab\*tce 0.25 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TCMa 0.01 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 0.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TCMa 0.01 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 0.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TCMa 0.01 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 0.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TCMa 0.01 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 0.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

UE59-7, 5 step scales for constant CIELAB hue 91/360 = 0.252 (left)

BAM-test chart UE59; Colorimetric systems NCS11a & NCS11ainput: cmy0\* setcmykcolor

D65: 2 coordinate data of 5 step colour scales for 10 hues

Output: Colorimetric Reflective System NCS11

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

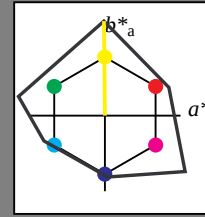
$lab^*tch$  and  $lab^*nch$

D65: hue J

LCH\*Ma: 91 125 91

rgb\*Ma: 1.0 1.0 0.0

triangle lightness  $t^*$



relative Inform. Technology (IT)  
olvi3\* 1.0 1.0 1.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 95.41 0.0 -0.01  
LAB\*LABa 95.41 0.0 0.0  
LAB\*TCMa 99.99 0.01 0.0

relative CIELAB lab\*  
lab\*lab 1.0 0.0 0.0  
lab\*tch 1.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 1.0 0.0 0.0  
lab\*tce 1.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.75 0.75 0.75 (1.0)  
cmyn3\* 0.25 0.25 0.25 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 74.31 0.02 0.0  
LAB\*LABa 74.31 0.02 0.0  
LAB\*TCMa 75.00 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.75 0.0 0.0  
lab\*tch 0.75 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.75 0.0 0.0  
lab\*tce 0.75 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.5 0.5 0.5 (0.0)  
cmyn3\* 0.5 0.5 0.5 (0.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 53.21 0.04 0.0  
LAB\*LABa 53.21 0.04 0.0  
LAB\*TCMa 50.00 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.5 0.0 0.0  
lab\*tch 0.5 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.5 0.0 0.0  
lab\*tce 0.5 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.25 0.25 0.25 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 32.11 0.08 0.0  
LAB\*LABa 32.11 0.08 0.0  
LAB\*TCMa 25.00 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.25 0.0 0.0  
lab\*tch 0.25 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.25 0.0 0.0  
lab\*tce 0.25 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TCMa 0.01 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 0.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.25 0.25 0.25 (1.0)  
cmyn3\* 0.75 0.75 0.75 (0.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 32.11 0.08 0.0  
LAB\*LABa 32.11 0.08 0.0  
LAB\*TCMa 25.00 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.25 0.0 0.0  
lab\*tch 0.25 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.25 0.0 0.0  
lab\*tce 0.25 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TCMa 0.01 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 0.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TCMa 0.01 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 0.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TCMa 0.01 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 0.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 (0.5)  
cmyn4\* 0.0 0.0 0.0 (0.5)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TCMa 0.01 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 0.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

5 step scales for constant CIELAB hue 91/360 = 0.252 (right)

output: no change compared to input

output: *no change compared to input*

### Input: Colorimetric Reflective System NCS11

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

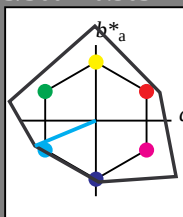
$lab^*tch$  and  $lab^*nch$

D65: hue G50B

LCH\*Ma: 59 87 203

rgb\*Ma: 0.0 1.0 1.0

triangle lightness  $t^*$



% Gamut

$u^*_{rel} = 149$

relative Inform. Technology (IT)

|          |     |     |     |       |
|----------|-----|-----|-----|-------|
| olvi3*   | 1.0 | 1.0 | 1.0 | (1.0) |
| olvi4*   | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi5*   | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi6*   | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi7*   | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi8*   | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi9*   | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi10*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi11*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi12*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi13*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi14*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi15*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi16*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi17*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi18*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi19*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi20*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi21*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi22*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi23*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi24*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi25*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi26*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi27*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi28*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi29*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi30*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi31*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi32*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi33*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi34*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi35*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi36*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi37*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi38*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi39*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi40*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi41*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi42*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi43*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi44*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi45*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi46*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi47*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi48*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi49*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi50*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi51*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi52*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi53*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi54*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi55*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi56*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi57*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi58*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi59*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi60*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi61*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi62*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi63*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi64*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi65*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi66*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi67*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi68*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi69*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi70*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi71*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi72*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi73*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi74*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi75*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi76*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi77*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi78*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi79*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi80*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi81*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi82*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi83*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi84*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi85*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi86*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi87*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi88*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi89*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi90*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi91*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi92*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi93*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi94*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi95*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi96*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi97*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi98*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi99*  | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi100* | 0.0 | 0.0 | 0.0 | (0.0) |

relative Inform. Technology (IT)

|          |      |      |      |       |
|----------|------|------|------|-------|
| olvi3*   | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi4*   | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi5*   | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi6*   | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi7*   | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi8*   | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi9*   | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi10*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi11*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi12*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi13*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi14*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi15*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi16*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi17*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi18*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi19*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi20*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi21*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi22*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi23*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi24*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi25*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi26*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi27*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi28*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi29*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi30*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi31*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi32*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi33*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi34*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi35*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi36*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi37*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi38*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi39*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi40*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi41*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi42*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi43*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi44*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi45*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi46*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi47*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi48*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi49*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi50*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi51*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi52*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi53*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi54*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi55*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi56*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi57*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi58*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi59*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi60*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi61*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi62*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi63*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi64*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi65*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi66*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi67*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi68*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi69*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi70*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi71*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi72*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi73*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi74*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi75*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi76*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi77*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi78*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi79*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi80*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi81*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi82*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi83*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi84*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi85*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi86*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi87*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi88*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi89*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi90*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi91*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi92*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi93*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi94*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi95*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi96*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi97*  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi98*  | 0.5  | 0.5  | 0.5  | (0.5) |
| olvi99*  | 0.75 | 0.75 | 0.75 | (1.0) |
| olvi100* | 0.25 | 0.25 | 0.25 | (0.0) |

|                              |       |        |        |
|------------------------------|-------|--------|--------|
| LAB*1CHa                     | 8/5   | 21.81  | 202.34 |
| relative CIELAB Lab*         |       |        |        |
| lab*lab                      | 0.893 | -0.23  | -0.095 |
| lab*tch                      | 0.875 | 0.25   | 0.563  |
| lab*ncH                      | 0.0   | 0.25   | 0.563  |
| relative Natural Colour (NC) |       |        |        |
| lab*lrj                      | 0.893 | -0.208 | -0.136 |
| lab*tce                      | 0.875 | 0.25   | 0.592  |
| lab*nce                      | 0.0   | 0.25   | g36b   |



### Input: Colorimetric Reflective System NCS11

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

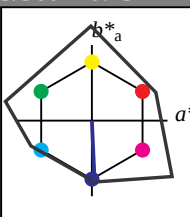
$lab^*tch$  and  $lab^*nch$

D65: hue B

LCH\*Ma: 49 81 273

rgb\*Ma: 0.0 0.0 1.0

triangle lightness  $t^*$



### 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          |

%Regularity

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

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

relative Inform. Technology (IT)  
olvi3\* 1.0 1.0 1.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 95.41 0.0 -0.01  
LAB\*LABa 95.41 0.0 0.0  
LAB\*TC<sub>Ma</sub> 99.99 0.01 0.0

relative CIELAB lab\*  
lab\*lab 1.0 0.0 0.0  
lab\*tch 1.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 1.0 0.0 0.0  
lab\*trc 1.0 0.0 0.0  
lab\*ncc 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.75 0.75 0.75 (1.0)  
cmyn3\* 0.25 0.25 0.25 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 74.31 0.02 0.0  
LAB\*LABa 74.31 0.02 0.0  
LAB\*TC<sub>Ma</sub> 75.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.863 0.011 -0.249  
lab\*tch 0.875 0.25 0.757  
lab\*nch 0.0 0.25 0.757  
relative Natural Colour (NC)  
lab\*trj 0.863 0.003 -0.249  
lab\*trc 0.875 0.25 0.752  
lab\*ncc 0.0 0.25 0.752

relative Inform. Technology (IT)  
olvi3\* 0.5 0.5 0.5 (1.0)  
cmyn3\* 0.5 0.5 0.5 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 53.21 0.04 0.0  
LAB\*LABa 53.21 0.04 0.0  
LAB\*TC<sub>Ma</sub> 50.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.75 0.5 0.0  
lab\*tch 0.75 0.5 0.0  
lab\*nch 0.0 0.5 0.0  
relative Natural Colour (NC)  
lab\*trj 0.75 0.5 0.0  
lab\*trc 0.75 0.5 0.0  
lab\*ncc 0.0 0.5 0.0

relative Inform. Technology (IT)  
olvi3\* 0.25 0.25 0.25 (1.0)  
cmyn3\* 0.75 0.75 0.75 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 32.11 0.08 0.0  
LAB\*LABa 32.11 0.08 0.0  
LAB\*TC<sub>Ma</sub> 30.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.613 0.011 -0.249  
lab\*tch 0.625 0.25 0.757  
lab\*nch 0.0 0.25 0.757  
relative Natural Colour (NC)  
lab\*trj 0.613 0.003 -0.249  
lab\*trc 0.625 0.25 0.752  
lab\*ncc 0.0 0.25 0.752

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 0.75 0.75 0.75 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TC<sub>Ma</sub> 0.01 0.01 -

relative CIELAB lab\*  
lab\*lab 0.113 0.011 -0.249  
lab\*tch 0.125 0.25 0.757  
lab\*nch 0.0 0.25 0.757  
relative Natural Colour (NC)  
lab\*trj 0.113 0.003 -0.249  
lab\*trc 0.125 0.25 0.752  
lab\*ncc 0.0 0.25 0.752

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 0.25 0.25 0.25 (1.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 3.01 1.89 0.0  
LAB\*LABa 3.01 1.89 0.0  
LAB\*TC<sub>Ma</sub> 25.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.363 0.034 -0.748  
lab\*tch 0.375 0.25 0.757  
lab\*nch 0.0 0.25 0.757  
relative Natural Colour (NC)  
lab\*trj 0.363 0.009 -0.749  
lab\*trc 0.375 0.25 0.752  
lab\*ncc 0.0 0.25 0.752

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 0.0 0.0 0.0  
LAB\*LABa 0.0 0.0 0.0  
LAB\*TC<sub>Ma</sub> 0.0 0.0 -

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*trc 0.0 0.0 0.0  
lab\*ncc 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 0.0 0.0 0.0  
LAB\*LABa 0.0 0.0 0.0  
LAB\*TC<sub>Ma</sub> 0.0 0.0 -

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*trc 0.0 0.0 0.0  
lab\*ncc 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 0.0 0.0 0.0  
LAB\*LABa 0.0 0.0 0.0  
LAB\*TC<sub>Ma</sub> 0.0 0.0 -

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*trc 0.0 0.0 0.0  
lab\*ncc 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 0.0 0.0 0.0  
LAB\*LABa 0.0 0.0 0.0  
LAB\*TC<sub>Ma</sub> 0.0 0.0 -

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*trc 0.0 0.0 0.0  
lab\*ncc 0.0 0.0 0.0

UE59-7, 5 step scales for constant CIELAB hue 273/360 = 0.757 (left)

BAM-test chart UE59; Colorimetric systems NCS11a & NCS11ainput:  $cmyn0^* setcmynkcolor$

D65: 2 coordinate data of 5 step colour scales for 10 hues

### Output: Colorimetric Reflective System NCS11

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

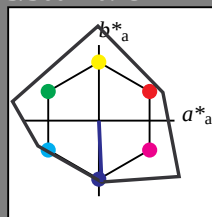
$lab^*tch$  and  $lab^*nch$

D65: hue B

LCH\*Ma: 49 81 273

rgb\*Ma: 0.0 0.0 1.0

triangle lightness  $t^*$



### 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          |

%Regularity

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

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

relative Inform. Technology (IT)  
olvi3\* 1.0 1.0 1.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 95.41 0.0 -0.01  
LAB\*LABa 95.41 0.0 0.0  
LAB\*TC<sub>Ma</sub> 99.99 0.01 0.0

relative CIELAB lab\*  
lab\*lab 1.0 0.0 0.0  
lab\*tch 1.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 1.0 0.0 0.0  
lab\*trc 1.0 0.0 0.0  
lab\*ncc 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.75 0.75 0.75 (1.0)  
cmyn3\* 0.25 0.25 0.25 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 74.31 0.02 0.0  
LAB\*LABa 74.31 0.02 0.0  
LAB\*TC<sub>Ma</sub> 75.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.863 0.011 -0.249  
lab\*tch 0.875 0.25 0.757  
lab\*nch 0.0 0.25 0.757  
relative Natural Colour (NC)  
lab\*trj 0.863 0.003 -0.249  
lab\*trc 0.875 0.25 0.752  
lab\*ncc 0.0 0.25 0.752

relative Inform. Technology (IT)  
olvi3\* 0.5 0.5 0.5 (1.0)  
cmyn3\* 0.5 0.5 0.5 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 53.21 0.04 0.0  
LAB\*LABa 53.21 0.04 0.0  
LAB\*TC<sub>Ma</sub> 50.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.75 0.5 0.0  
lab\*tch 0.75 0.5 0.0  
lab\*nch 0.0 0.5 0.0  
relative Natural Colour (NC)  
lab\*trj 0.75 0.5 0.0  
lab\*trc 0.75 0.5 0.0  
lab\*ncc 0.0 0.5 0.0

relative Inform. Technology (IT)  
olvi3\* 0.25 0.25 0.25 (1.0)  
cmyn3\* 0.75 0.75 0.75 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 32.11 0.08 0.0  
LAB\*LABa 32.11 0.08 0.0  
LAB\*TC<sub>Ma</sub> 30.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.613 0.011 -0.249  
lab\*tch 0.625 0.25 0.757  
lab\*nch 0.0 0.25 0.757  
relative Natural Colour (NC)  
lab\*trj 0.613 0.003 -0.249  
lab\*trc 0.625 0.25 0.752  
lab\*ncc 0.0 0.25 0.752

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 0.75 0.75 0.75 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TC<sub>Ma</sub> 0.01 0.01 -

relative CIELAB lab\*  
lab\*lab 0.113 0.011 -0.249  
lab\*tch 0.125 0.25 0.757  
lab\*nch 0.0 0.25 0.757  
relative Natural Colour (NC)  
lab\*trj 0.113 0.003 -0.249  
lab\*trc 0.125 0.25 0.752  
lab\*ncc 0.0 0.25 0.752

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 0.25 0.25 0.25 (1.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 3.01 1.89 0.0  
LAB\*LABa 3.01 1.89 0.0  
LAB\*TC<sub>Ma</sub> 25.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.363 0.034 -0.748  
lab\*tch 0.375 0.25 0.757  
lab\*nch 0.0 0.25 0.757  
relative Natural Colour (NC)  
lab\*trj 0.363 0.009 -0.749  
lab\*trc 0.375 0.25 0.752  
lab\*ncc 0.0 0.25 0.752

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 0.0 0.0 0.0  
LAB\*LABa 0.0 0.0 0.0  
LAB\*TC<sub>Ma</sub> 0.0 0.0 -

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*trc 0.0 0.0 0.0  
lab\*ncc 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 0.0 0.0 0.0  
LAB\*LABa 0.0 0.0 0.0  
LAB\*TC<sub>Ma</sub> 0.0 0.0 -

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*trc 0.0 0.0 0.0  
lab\*ncc 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 0.0 0.0 0.0  
LAB\*LABa 0.0 0.0 0.0  
LAB\*TC<sub>Ma</sub> 0.0 0.0 -

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*trc 0.0 0.0 0.0  
lab\*ncc 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 0.0 0.0 0.0  
LAB\*LABa 0.0 0.0 0.0  
LAB\*TC<sub>Ma</sub> 0.0 0.0 -

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*trc 0.0 0.0 0.0  
lab\*ncc 0.0 0.0 0.0

5 step scales for constant CIELAB hue 273/360 = 0.757 (right)

output: no change compared to input

|    |  |
|----|--|
| -8 |  |
| -6 |  |

output: *no change compared to input*

### Input: Colorimetric Reflective System NCS11

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

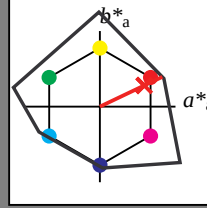
$lab^*tch$  and  $lab^*nch$

D65: hue R

LCH\*Ma: 48 91 25

rgb\*Ma: 1.0 0.02 0.0

triangle lightness  $t^*$



% Gamut

$u^*_{rel} = 149$

relative Inform. Technology (IT)

|        |     |     |     |       |
|--------|-----|-----|-----|-------|
| olvi3* | 1.0 | 1.0 | 1.0 | (1.0) |
| olvi3* | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi4* | 1.0 | 1.0 | 1.0 | (1.0) |
| olvi4* | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi5* | 1.0 | 1.0 | 1.0 | (1.0) |
| olvi5* | 0.0 | 0.0 | 0.0 | (0.0) |

standard and adapted CIELAB

|         |       |     |       |
|---------|-------|-----|-------|
| LAB*Lab | 95.41 | 0.0 | -0.01 |
| LAB*Lab | 95.41 | 0.0 | 0.0   |
| LAB*Lab | 95.41 | 0.0 | 0.0   |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.756 | 0.75 | (1.0) |
| olvi3* | 0.0 | 0.244 | 0.25 | (0.0) |
| olvi4* | 1.0 | 0.756 | 0.75 | (1.0) |
| olvi4* | 0.0 | 0.244 | 0.25 | (0.0) |
| olvi5* | 1.0 | 0.756 | 0.75 | (1.0) |
| olvi5* | 0.0 | 0.244 | 0.25 | (0.0) |

standard and adapted CIELAB

|         |       |       |      |
|---------|-------|-------|------|
| LAB*Lab | 83.61 | 20.65 | 9.84 |
| LAB*Lab | 83.61 | 20.64 | 9.84 |
| LAB*Lab | 83.61 | 20.64 | 9.84 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 71.81 | 41.31 | 19.68 |
| LAB*Lab | 71.81 | 41.28 | 19.68 |
| LAB*Lab | 71.81 | 41.28 | 19.68 |

relative Inform. Technology (IT)

|        |     |       |     |       |
|--------|-----|-------|-----|-------|
| olvi3* | 1.0 | 0.512 | 0.5 | (1.0) |
| olvi3* | 0.0 | 0.488 | 0.5 | (0.0) |
| olvi4* | 1.0 | 0.512 | 0.5 | (1.0) |
| olvi4* | 0.0 | 0.488 | 0.5 | (0.0) |
| olvi5* | 1.0 | 0.512 | 0.5 | (1.0) |
| olvi5* | 0.0 | 0.488 | 0.5 | (0.0) |

standard and adapted CIELAB

|         |       |       |      |
|---------|-------|-------|------|
| LAB*Lab | 62.51 | 20.68 | 9.85 |
| LAB*Lab | 62.51 | 20.64 | 9.84 |
| LAB*Lab | 62.51 | 20.64 | 9.84 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 60.01 | 61.96 | 29.53 |
| LAB*Lab | 60.01 | 61.92 | 29.52 |
| LAB*Lab | 60.01 | 61.92 | 29.52 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 50.71 | 41.33 | 19.69 |
| LAB*Lab | 50.71 | 41.29 | 19.68 |
| LAB*Lab | 50.71 | 41.29 | 19.68 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 48.21 | 82.61 | 39.36 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 48.21 | 82.61 | 39.36 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 48.21 | 82.61 | 39.36 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 48.21 | 82.61 | 39.36 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 48.21 | 82.61 | 39.36 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |

### 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 |

### %Regularity

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

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

1.00

0.75

$n^* = 0.00$

0.25

$n^* = 0.25$

$n^* = 0.50$

0.00

chromaticness  $c^*$

### Output: Colorimetric Reflective System NCS11

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

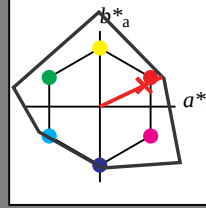
$lab^*tch$  and  $lab^*nch$

D65: hue R

LCH\*Ma: 48 91 25

rgb\*Ma: 1.0 0.02 0.0

triangle lightness  $t^*$



% Gamut

$u^*_{rel} = 149$

relative Inform. Technology (IT)

|        |     |     |     |       |
|--------|-----|-----|-----|-------|
| olvi3* | 1.0 | 1.0 | 1.0 | (1.0) |
| olvi3* | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi4* | 1.0 | 1.0 | 1.0 | (1.0) |
| olvi4* | 0.0 | 0.0 | 0.0 | (0.0) |
| olvi5* | 1.0 | 1.0 | 1.0 | (1.0) |
| olvi5* | 0.0 | 0.0 | 0.0 | (0.0) |

standard and adapted CIELAB

|         |       |     |       |
|---------|-------|-----|-------|
| LAB*Lab | 95.41 | 0.0 | -0.01 |
| LAB*Lab | 95.41 | 0.0 | 0.0   |
| LAB*Lab | 95.41 | 0.0 | 0.0   |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.756 | 0.75 | (1.0) |
| olvi3* | 0.0 | 0.244 | 0.25 | (0.0) |
| olvi4* | 1.0 | 0.756 | 0.75 | (1.0) |
| olvi4* | 0.0 | 0.244 | 0.25 | (0.0) |
| olvi5* | 1.0 | 0.756 | 0.75 | (1.0) |
| olvi5* | 0.0 | 0.244 | 0.25 | (0.0) |

standard and adapted CIELAB

|         |       |       |      |
|---------|-------|-------|------|
| LAB*Lab | 83.61 | 20.65 | 9.84 |
| LAB*Lab | 83.61 | 20.64 | 9.84 |
| LAB*Lab | 83.61 | 20.64 | 9.84 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 71.81 | 41.31 | 19.68 |
| LAB*Lab | 71.81 | 41.28 | 19.68 |
| LAB*Lab | 71.81 | 41.28 | 19.68 |

relative Inform. Technology (IT)

|        |     |       |     |       |
|--------|-----|-------|-----|-------|
| olvi3* | 1.0 | 0.512 | 0.5 | (1.0) |
| olvi3* | 0.0 | 0.488 | 0.5 | (0.0) |
| olvi4* | 1.0 | 0.512 | 0.5 | (1.0) |
| olvi4* | 0.0 | 0.488 | 0.5 | (0.0) |
| olvi5* | 1.0 | 0.512 | 0.5 | (1.0) |
| olvi5* | 0.0 | 0.488 | 0.5 | (0.0) |

standard and adapted CIELAB

|         |       |       |      |
|---------|-------|-------|------|
| LAB*Lab | 62.51 | 20.68 | 9.85 |
| LAB*Lab | 62.51 | 20.64 | 9.84 |
| LAB*Lab | 62.51 | 20.64 | 9.84 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 60.01 | 61.96 | 29.53 |
| LAB*Lab | 60.01 | 61.92 | 29.52 |
| LAB*Lab | 60.01 | 61.92 | 29.52 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 50.71 | 41.33 | 19.69 |
| LAB*Lab | 50.71 | 41.29 | 19.68 |
| LAB*Lab | 50.71 | 41.29 | 19.68 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 48.21 | 82.61 | 39.36 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 48.21 | 82.61 | 39.36 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 48.21 | 82.61 | 39.36 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |

relative Inform. Technology (IT)

|        |     |       |      |       |
|--------|-----|-------|------|-------|
| olvi3* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi3* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi4* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi4* | 0.0 | 0.732 | 0.75 | (0.0) |
| olvi5* | 1.0 | 0.268 | 0.25 | (1.0) |
| olvi5* | 0.0 | 0.732 | 0.75 | (0.0) |

standard and adapted CIELAB

|         |       |       |       |
|---------|-------|-------|-------|
| LAB*Lab | 48.21 | 82.61 | 39.36 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |
| LAB*Lab | 48.21 | 82.57 | 39.35 |

C

## Input: Colorimetric Reflective System NCS11

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

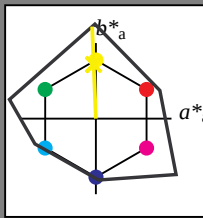
$lab^*tch$  and  $lab^*nch$

D65: hue J

LCH\*Ma: 90 122 92

rgb\*Ma: 0.97 1.0 0.0

triangle lightness  $t^*$



% Gamut

$u^*_{rel} = 149$

relative Inform. Technology (IT)  
olvi3\* 1.0 1.0 1.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 95.41 0.0 -0.01  
LAB\*LABa 95.41 0.0 0.0  
LAB\*TCHa 99.99 0.01 0.0

relative CIELAB lab\*  
lab\*lab 1.0 0.0 0.0  
lab\*tch 1.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 1.0 0.0 0.0  
lab\*tce 1.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.75 0.75 0.75 (1.0)  
cmyn3\* 0.25 0.25 0.25 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 74.31 0.02 0.0  
LAB\*LABa 74.31 0.02 0.0  
LAB\*TCHa 75.0 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.75 0.0 0.0  
lab\*tch 0.75 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.75 0.0 0.0  
lab\*tce 0.75 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.5 0.5 0.5 (0.0)  
cmyn3\* 0.5 0.5 0.5 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 53.21 0.04 0.0  
LAB\*LABa 53.21 0.04 0.0  
LAB\*TCHa 50.0 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.5 0.0 0.0  
lab\*tch 0.5 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.5 0.0 0.0  
lab\*tce 0.5 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.25 0.25 0.25 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 32.11 0.07 0.01  
LAB\*LABa 32.11 0.07 0.01  
LAB\*TCHa 25.0 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.25 0.0 0.0  
lab\*tch 0.25 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.25 0.0 0.0  
lab\*tce 0.25 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 1.0 1.0 1.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (0.0)  
cmyn4\* 0.0 0.0 0.0 (1.0)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TCHa 0.01 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 1.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 1.0 0.0 0.0  
lab\*nce 1.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 1.0 1.0 1.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (0.0)  
cmyn4\* 0.0 0.0 0.0 (1.0)  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.07 0.01  
LAB\*TCHa 0.01 0.01 0.0

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 1.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 1.0 0.0 0.0  
lab\*nce 1.0 0.0 0.0

## 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          |

%Regularity

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

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

relative Inform. Technology (IT)  
olvi3\* 0.984 1.0 0.5 (1.0)  
cmyn3\* 0.016 0.0 0.5 (0.0)  
olvi4\* 0.984 1.0 0.5 (1.0)  
cmyn4\* 0.016 0.0 0.5 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 92.92 -2.44 60.89  
LAB\*LABa 92.92 -2.44 60.89  
LAB\*TCHa 75.0 60.94 92.32

relative CIELAB lab\*  
lab\*lab 0.971 -0.019 0.499  
lab\*tch 0.75 0.5 0.256  
lab\*nch 0.0 0.5 0.256  
relative Natural Colour (NC)  
lab\*trj 0.971 0.0 0.5  
lab\*tce 0.75 0.5 0.256  
lab\*nce 0.0 0.5 0.256

relative Inform. Technology (IT)  
olvi3\* 0.734 0.75 0.25 (1.0)  
cmyn3\* 0.266 0.25 0.75 (0.0)  
olvi4\* 0.984 1.0 0.5 (1.0)  
cmyn4\* 0.016 0.0 0.5 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 71.83 -2.44 60.9  
LAB\*LABa 71.83 -2.44 60.9  
LAB\*TCHa 50.0 60.94 92.32

relative CIELAB lab\*  
lab\*lab 0.726 0.75 0.0 (1.0)  
lab\*tch 0.625 0.75 0.256  
lab\*nch 0.0 0.75 0.256  
relative Natural Colour (NC)  
lab\*trj 0.726 0.0 0.5  
lab\*tce 0.625 0.75 0.256  
lab\*nce 0.0 0.75 0.256

relative Inform. Technology (IT)  
olvi3\* 0.596 1.0 0.0 (1.0)  
cmyn3\* 0.404 0.0 1.0 (0.0)  
olvi4\* 0.984 1.0 0.5 (1.0)  
cmyn4\* 0.016 0.0 0.5 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 50.0 121.87 92.32  
LAB\*LABa 50.0 121.87 92.32  
LAB\*TCHa 50.0 121.87 92.32

relative CIELAB lab\*  
lab\*lab 0.596 -0.029 0.749  
lab\*tch 0.5 0.5 0.256  
lab\*nch 0.0 0.5 0.256  
relative Natural Colour (NC)  
lab\*trj 0.596 0.0 1.0  
lab\*tce 0.5 0.5 0.256  
lab\*nce 0.0 0.5 0.256

relative Inform. Technology (IT)  
olvi3\* 0.484 0.5 0.0 (1.0)  
cmyn3\* 0.516 0.5 0.0 (0.0)  
olvi4\* 0.984 1.0 0.5 (1.0)  
cmyn4\* 0.016 0.0 0.5 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 30.57 1.35 0.25  
LAB\*LABa 30.57 1.35 0.25  
LAB\*TCHa 37.5 30.47 92.33

relative CIELAB lab\*  
lab\*lab 0.485 -0.029 0.749  
lab\*tch 0.375 0.75 0.256  
lab\*nch 0.0 0.75 0.256  
relative Natural Colour (NC)  
lab\*trj 0.485 0.0 0.5  
lab\*tce 0.375 0.75 0.256  
lab\*nce 0.0 0.75 0.256

relative Inform. Technology (IT)  
olvi3\* 0.242 0.25 0.0 (1.0)  
cmyn3\* 0.758 0.75 1.0 (0.0)  
olvi4\* 0.982 1.0 0.5 (1.0)  
cmyn4\* 0.008 0.0 0.25 0.75  
standard and adapted CIELAB  
LAB\*LAB 22.0 0.42 60.89  
LAB\*LABa 22.0 0.42 60.89  
LAB\*TCHa 25.01 60.93 92.33

relative CIELAB lab\*  
lab\*lab 0.471 -0.019 0.499  
lab\*tch 0.25 0.5 0.256  
lab\*nch 0.0 0.5 0.256  
relative Natural Colour (NC)  
lab\*trj 0.471 0.0 0.5  
lab\*tce 0.25 0.5 0.256  
lab\*nce 0.0 0.5 0.256

$n^* = 0.50$

$n^* = 0.25$

$n^* = 0.00$

0.25

0.00

chromaticness  $c^*$

$n^* = 1.0$

0.75

0.50

0.25

0.00

0.25

0.50

0.75

1.00

1.25

1.50

1.75

2.00

2.25

2.50

2.75

3.00

3.25

3.50

3.75

4.00

4.25

4.50

4.75

5.00

5.25

5.50

5.75

6.00

6.25

6.50

6.75

7.00

7.25

7.50

7.75

8.00

8.25

8.50

8.75

9.00

9.25

9.50

9.75

10.00

10.25

10.50

10.75

11.00

11.25

11.50

11.75

12.00

12.25

12.50

12.75

13.00

13.25

13.50

13.75

14.00

14.25

14.50

14.75

15.00

15.25

15.50

15.75

16.00

16.25

16.50

16.75

17.00

17.25

17.50

17.75

18.00

18.25

18.50

18.75

19.00

19.25

19.50

19.75

20.00

20.25

20.50

20.75

21.00

21.25

21.50

21.75

22.00

22.25

22.50

22.75

23.00

23.25

23.50

23.75

24.00

24.25

24.50

24.75

25.00

25.25

25.50

25.75

26.00

26.25

26.50

26.75

27.00

27.25

27.50

27.75

28.00

28.25

28.50

28.75

29.00

29.25

29.50

29.75

30.00

30.25

30.50

30.75

31.00

31.25

31.50

31.75

32.00

32.25

32.50

32.75

33.00

33.25

33.50

33.75

34.00

34.25

34.50

34.75

35.00

35.25

35.50

35.75

36.00

36.25

36.50

36.75

37.00

37.25

37.50

37.75

38.00

38.25

38.50

38.75



### Input: Colorimetric Reflective System NCS11

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

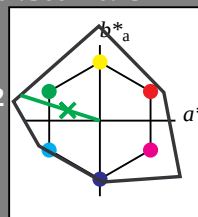
$lab^*tch$  and  $lab^*nch$

D65: hue G

LCH\*Ma: 65 110 162

rgb\*Ma: 0.08 1.0 0.0

triangle lightness  $t^*$



### 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          |

### %Regularity

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

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

relative Inform. Technology (IT)  
olvi3\* 1.0 1.0 1.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 95.41 0.0 -0.01  
LAB\*LABa 95.41 0.0 0.0  
LAB\*TC<sub>Ma</sub> 99.99 0.01 0.0

relative CIELAB lab\*  
lab\*lab 1.0 0.0 0.0  
lab\*tch 1.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 1.0 0.0 0.0  
lab\*tce 1.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.75 0.75 0.75 (1.0)  
cmyn3\* 0.25 0.25 0.25 (0.0)  
olvi4\* 1.0 1.0 1.0 0.75  
cmyn4\* 0.0 0.0 0.0 0.25  
standard and adapted CIELAB  
LAB\*LAB 74.31 0.02 0.0  
LAB\*LABa 74.31 0.0 0.0  
LAB\*TC<sub>Ma</sub> 75.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.75 0.0 0.0  
lab\*tch 0.75 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.75 0.0 0.0  
lab\*tce 0.75 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.5 0.5 0.5 (0.0)  
cmyn3\* 0.5 0.5 0.5 (0.0)  
olvi4\* 1.0 1.0 1.0 0.5  
cmyn4\* 0.0 0.0 0.0 0.5  
standard and adapted CIELAB  
LAB\*LAB 53.21 0.04 0.0  
LAB\*LABa 53.21 0.0 0.0  
LAB\*TC<sub>Ma</sub> 50.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.5 0.0 0.0  
lab\*tch 0.5 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.5 0.0 0.0  
lab\*tce 0.5 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.25 0.25 0.25 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 0.25  
cmyn4\* 0.0 0.0 0.0 0.75  
standard and adapted CIELAB  
LAB\*LAB 32.11 0.07 0.01  
LAB\*LABa 32.11 0.0 0.0  
LAB\*TC<sub>Ma</sub> 25.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.25 0.0 0.0  
lab\*tch 0.25 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.25 0.0 0.0  
lab\*tce 0.25 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 1.0 1.0 1.0 (0.0)  
olvi4\* 1.0 1.0 1.0 0.0  
cmyn4\* 0.0 0.0 0.0 1.0  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.0 0.0  
LAB\*TC<sub>Ma</sub> 0.01 0.01 -

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 1.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 0.0 0.0 0.0  
lab\*nce 1.0 0.0 0.0

$n^* = 1.0$

$n^* = 1.0$

UE59-7, 5 step scales for constant CIELAB hue 162/360 = 0.451 (left)

### Output: Colorimetric Reflective System NCS11

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

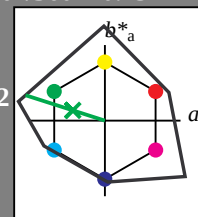
$lab^*tch$  and  $lab^*nch$

D65: hue G

LCH\*Ma: 65 110 162

rgb\*Ma: 0.08 1.0 0.0

triangle lightness  $t^*$



### 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          |

### %Regularity

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

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

relative Inform. Technology (IT)  
olvi3\* 1.0 1.0 1.0 (1.0)  
cmyn3\* 0.0 0.0 0.0 (0.0)  
olvi4\* 1.0 1.0 1.0 (1.0)  
cmyn4\* 0.0 0.0 0.0 (0.0)  
standard and adapted CIELAB  
LAB\*LAB 95.41 0.0 -0.01  
LAB\*LABa 95.41 0.0 0.0  
LAB\*TC<sub>Ma</sub> 99.99 0.01 0.0

relative CIELAB lab\*  
lab\*lab 1.0 0.0 0.0  
lab\*tch 1.0 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 1.0 0.0 0.0  
lab\*tce 1.0 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.75 0.75 0.75 (1.0)  
cmyn3\* 0.25 0.25 0.25 (0.0)  
olvi4\* 1.0 1.0 1.0 0.75  
cmyn4\* 0.0 0.0 0.0 0.25  
standard and adapted CIELAB  
LAB\*LAB 74.31 0.02 0.0  
LAB\*LABa 74.31 0.0 0.0  
LAB\*TC<sub>Ma</sub> 75.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.75 0.0 0.0  
lab\*tch 0.75 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.75 0.0 0.0  
lab\*tce 0.75 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.5 0.5 0.5 (0.0)  
cmyn3\* 0.5 0.5 0.5 (0.0)  
olvi4\* 1.0 1.0 1.0 0.5  
cmyn4\* 0.0 0.0 0.0 0.5  
standard and adapted CIELAB  
LAB\*LAB 53.21 0.04 0.0  
LAB\*LABa 53.21 0.0 0.0  
LAB\*TC<sub>Ma</sub> 50.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.5 0.0 0.0  
lab\*tch 0.5 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.5 0.0 0.0  
lab\*tce 0.5 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.25 0.25 0.25 (0.0)  
cmyn3\* 0.75 0.75 0.75 (1.0)  
olvi4\* 1.0 1.0 1.0 0.25  
cmyn4\* 0.0 0.0 0.0 0.75  
standard and adapted CIELAB  
LAB\*LAB 32.11 0.07 0.01  
LAB\*LABa 32.11 0.0 0.0  
LAB\*TC<sub>Ma</sub> 25.0 0.01 -

relative CIELAB lab\*  
lab\*lab 0.25 0.0 0.0  
lab\*tch 0.25 0.0 0.0  
lab\*nch 0.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.25 0.0 0.0  
lab\*tce 0.25 0.0 0.0  
lab\*nce 0.0 0.0 0.0

relative Inform. Technology (IT)  
olvi3\* 0.0 0.0 0.0 (1.0)  
cmyn3\* 1.0 1.0 1.0 (0.0)  
olvi4\* 1.0 1.0 1.0 0.0  
cmyn4\* 0.0 0.0 0.0 1.0  
standard and adapted CIELAB  
LAB\*LAB 11.01 0.07 0.01  
LAB\*LABa 11.01 0.0 0.0  
LAB\*TC<sub>Ma</sub> 0.01 0.01 -

relative CIELAB lab\*  
lab\*lab 0.0 0.0 0.0  
lab\*tch 0.0 0.0 0.0  
lab\*nch 1.0 0.0 0.0  
relative Natural Colour (NC)  
lab\*trj 0.0 0.0 0.0  
lab\*tce 0.0 0.0 0.0  
lab\*nce 1.0 0.0 0.0

$n^* = 1.0$

$n^* = 1.0$

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

BAM-test chart UE59; Colorimetric systems NCS11a & NCS11ainput: cmy0\* setcmykcolor

D65: 2 coordinate data of 5 step colour scales for 10 hues

output: no change compared to input

