

V L O Y M C

6 -8 8 -6

C M Y O L V

-6 -8 8 -6

**TUB registration: 20200201-AEB1/AEB1L0NA.TXT/.PS**

**TUB material: code=rha4ta**

**N: no 3D-linearization (OL) in file (F) or PS-startup (S), page 1/1**

**Colour management by change of the *rgb* data within the colour workflow before the linearized output**

See ISO-Ergonomics of human-systems interaction – Field assessment methods for electronic visual displays  
For ISO-test charts according to ISO 9241-306:2018 see: <http://standards.iso.org/iso/9241/306/ed-2/index.html>

The computer with an **Ergonomic Colour Processor (ECP)** includes the **1-Minus-Relations (1MR)**. It is valid:  
 $r=1-c, g=1-m, b=1-y$ . [1]. The output is equal for:  $r=g=b=0,5$  or  $c=m=y=0,5$  or  $k=0,5$  or  $w=1-k=0,5$ . [2]

If the 1MR is active, then the output of the ISO-test chart shows **equal output** in each colour square of:  
<http://standards.iso.org/iso/9241/306/ed-2/AE49/AE490-7N.PDF> and independent of the use of *rgb* or *cmyk*.

1) For an example see <http://standards.iso.org/iso/9241/306/ed-2/ES15.PDF> (showroom) clients  
The start and linearized output of many ISO-test charts of ISO 9241-306 is shown.

In a general case the Software Image Processor (RIP) transfers 16,7 (256x256x256-1) million *rgb* to *rgb'* data.  
In ISO 9241-306 the Software Image Processor (RIP) calculates the *rgb*' data by the equation  $rgb' = rgb^n$  [3]  
For eight standard ISO reflections it is valid:  $n = 1,000, 0,925, 0,850, \mathbf{0,775}, 0,700, 0,625, 0,550, 0,475$ .  
The bold standard value **n=0,775** is the standard ISO reflection in offices (2,5% of black compared to white).

AEB10-3N

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<http://standards.iso.org/iso/9241/306/ed-2/AE49/AE490-7N.PDF> and independent of the use of *rgb* or *cmyk*.

Many print workflows need *rgb* data in the files. Often for *cmyk* data 1MR is **not used**. For the many *RGB* printers the manufacturers use unknown *CMYK* separations. For users 100% UCR (grey is printed only by black *k*) is not possible. All *PostScript(PS)* and most proof printers **allow CMYK** separations defined by users. For users 100% UCR is possible. This reduces the print costs and enhance the visibility.

In a general case the Software Image Processor (RIP) transfers 16,7 (256x256x256-1) million *rgb* to *rgb'* data.  
For linearization methods see Klaus Richter (2016), 1,4MB, [http://farbe.li.tu-berlin.de/OUTLIN16\\_01.PDF](http://farbe.li.tu-berlin.de/OUTLIN16_01.PDF)

AEB11-3N

**Colour management by a change of the *rgb* data within the colour workflow before the linearized output**

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For ISO-test charts according to ISO 9241-306:2018 see: <http://standards.iso.org/iso/9241/306/ed-2/index.html>

The computer with an **Ergonomic Colour Processor (ECP)** includes the **1-Minus-Relations (1MR)**. It is valid:  
 $r=1-c, g=1-m, b=1-y$ . [1]. The output is equal for:  $r=g=b=0,5$  or  $c=m=y=0,5$  or  $k=0,5$  or  $w=1-k=0,5$ . [2]

If the 1MR is active, then the output of the ISO-test chart shows **equal output** in each colour square of:  
<http://standards.iso.org/iso/9241/306/ed-2/AE49/AE490-7N.PDF> and independent of the use of *rgb* or *cmyk*.

Only *cmyk* files can print 100% UCR (grey printed only by black *k*).  
In a general case the Software Image Processor (RIP) transfers 16,7 (256x256x256-1) million *rgb* to *rgb'* data.  
The appropriate fixed transfer *T* shall fill the CIELAB colour triangle: *W* – *N* – maximal colour – *W*.  
For any maximal colour it is valid: *k=0*. One of the 3 values *cmy0* or *rgb* has the value 1 and one other the value 0.  
For linearization methods see Klaus Richter (2016), 1,4MB, [http://farbe.li.tu-berlin.de/OUTLIN16\\_01.PDF](http://farbe.li.tu-berlin.de/OUTLIN16_01.PDF)

AEB11-7N

TUB-test chart AEB1; Virtual showroom technology for colour  
Steering of colour input and output with the Ergonomic Colour Processor (ECP)
input: *w/rgb/cmyk* → *rgb*