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Instructions for use



# Ugra/Fogra Media Wedge CMYK V3.0 – Standard layout

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# Instructions for use [Ugra/Fogra Media Wedge CMYK V3.0]

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### Contacting Fogra

Queries regarding use, output results or unexplainable effects may arise from time to time while using the Ugra/Fogra Media Wedge CMYK. Fogra will be glad to be of help in such cases. It must however be pointed out that this is applicable only to the current version of the Ugra/Fogra Media Wedge CMYK. Queries and problems that arise while using older [preceding version, etc.] control strip versions, cannot be handled by Fogra anymore.

The Ugra/Fogra Media Wedge CMYK is integrated in certain proofing systems as a licensed component. In case of queries regarding its use, please consult the respective manufacturers as well as their documentation. In case of problems regarding use and/or evaluation, only the respective manufacturers as well as their technical service hotlines will be able to offer technical support.

Please remember to convey the licence number and the corresponding username [found on the Ugra/Fogra Media Wedge CMYK, in the delivery note and on the Licence CD notes] as well as the company's address and contact person in case of all inquiries. Printouts, exposures, screenshots, etc. that might be helpful in finding solutions should be forwarded to Fogra in problem cases.

Up-to-date information about control media and Fogra activities are available on the internet on the Fogra website [www.fogra.org].

## 1 Introduction

One of the most important goals of quality assurance with regard to production in different printing processes [e.g. offset, gravure, newspaper and screen] is to make the expected print result predictable on the basis of a digital proof. This is the precise goal of the Media Standard Print [1]. It contains information about the proper creation of a contract proof and the required control media. A proof designated as contract proof must contain an Ugra/Fogra Media Wedge CMYK. Its colour values must correspond to the reference values of the printing conditions of the standardization series ISO 12647 [2] as well as the tolerances for the proofing process for digital data, as specified in ISO 12647-7 [3]. The guidelines are the basis for a smooth technical cooperation between the client, the prepress provider and the printer. Today, the Ugra/Fogra Media Wedge CMYK is a globally recognised control medium for digital proofing. It is essential for the professionally created contract proof and hence integrated into many proofing systems and RIPs as a licensed component. In addition, the Media Wedge can also be used as a digital control medium in the workflow, to observe the effects of image processing in the CMYK mode and other prepress processes.

## 2 Layout of the Ugra/Fogra Media Wedge CMYK

The Media Wedge is an essential tool for the professionally created contract proof based on ISO 12647-7 [Proof creation using digital data]. For this purpose, the Ugra/Fogra Media Wedge CMYK is available in different layouts and configurations. They are specifically designed for manual as also automatic evaluation using different measuring devices.

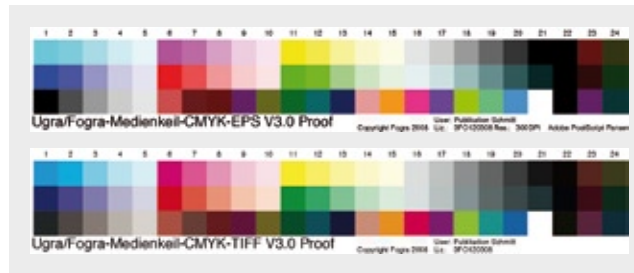


Fig. 1: Ugra/Fogra Media Wedge CMYK V3.0 for manual evaluation, EPS [above], TIFF data format [below] – patch dimensions 6 mm × 6 mm, illustration diminished here.

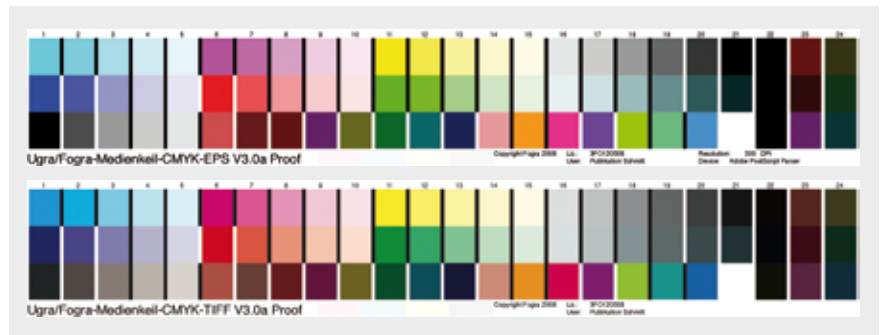


Fig. 2: Ugra/Fogra Media Wedge CMYK V3.0a for automatic evaluations, EPS [above], TIFF file format [below] – patch dimensions 8.5 mm × 8 mm, illustration diminished here.

Certain characteristics of Version 3.0 of the Media Wedge have clearly changed [refer Fig. 1 and Fig. 2]. It now includes

- an augmented nomenclature with the remark 'proof'
- new colour patches [72 patches in 3 rows]
- a definite reduction of the number of variants [2 standard layouts]
- only one combined license in the file formats TIFF and EPS

### 2.1 Nomenclature and colour patches of the Media Wedge V3.0

The new colour patches of the 'Media Wedge CMYK V3.0 Proof' demonstrate an increased sensitivity in the highlights and shadows. The nomenclature has been augmented with remark 'Proof', in order to point out that the Media Wedge was and is intended primarily for the digital proof. It is not intended for use in

production printing! The Media Wedge has been specifically designed keeping in mind the high quality demands made on proofs. The Media Wedge is of special importance when a contract proof based on the specifications of the MediaStandard is required. Version 3.0 is completely compatible with the versions 2.X, i.e. all 46 colour patches of the previous Media Wedge are included in Version 3.0. The evaluation of Version 3.0 with the additional colour patches is based on the tolerances as specified in ISO 12647-7 and Media Standard Print. All colour patches are also contained in the test target of ISO 12642-2 for characterization and profiling of output systems.

The following patches have been added [Fig. 3]:

- A) Patches in the highlight area [10 % and 20 % tone value] [Columns 4, 5, 9, 10, 14, 15]



Fig. 3: The red highlighted boxes show the new colour patches in the Ugra/Fogra Media Wedge CMYK V3.0a for manual evaluations [above] and in the Ugra/Fogra Media Wedge CMYK V3.0a for automatic evaluations [below].

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- B] Second grey patch condition [Patches C1 to C5]
- C] Chromatic colour overprinting on black [Column 22]
- D] Patches in the shadow area [ $L = 35$ ] [Columns 23, 24]

## Grey patches

Patches built only using black [grey] with the tonal values 10 %, 20 %, 40 %, 60 %, 80 % and 100 % are located in the upper grey patch row [Patches A16 to A21]. The grey patch row [Patches B16 to B21] located below contains patches that are built up with cyan, magenta and yellow [composed grey] based on a typical printing condition for paper type 1 and screen 60/cm specified in the standard ISO 12647-2 [4]. In Version 3.0 further grey patches [Patches C1 to C5] with the tone values 100 %, 70 %, 40 %, 20 % and 10 % have been added. For these patches the same tone value has been used in cyan, magenta and yellow. These patches are not included in the evaluation of grey conditions [ $\Delta E^*_{ab}$  or  $\Delta H^*$ ].

## The information line [status line]

The data format [TIFF or EPS] as well as the version number can be seen in the text lines below the patches. Four additional '3 % highlights patches' are found in this area; they are however intended only for visual evaluation. Further, the information line of the EPS file version displays the output resolution in dpi [dot per inch] and the product name of the output application. This information is not available in the TIFF file as no interactive retrievals from the output device are possible for this file format. If the EPS file is converted into a PDF file while processing the output [for example integrated in a document], then the output resolution and product name of the files that have been fixed by the corresponding programme through the conversion process will be displayed.

## 2.2 Interpreting the Media Wedge V3.0

All license partners of Fogra provide target values in their evaluation programmes along with their products. Users of the Media Wedge should make

sure while selecting measuring devices and proofing systems that they support the new Media Wedge. Further, they should display standardized CIELAB measurement values [without polarisation filter and without UV cut filter]. If measuring devices do not comply with these specifications, for example they measure using UV cut filters, then the characterization data [e.g. FOGRA39] provided by Fogra cannot be used as target values without prior recalibration and a proper aim value conversion. The necessary target values should be obtained from the respective device manufacturer.

## Instructions for manual evaluation

Generally, both layouts can be used for manual evaluation. The only requirement that must be fulfilled is that the measurement aperture and the measurement area used in the measuring device do not exceed the area of the measurement patch. Illustrations 1 and 2 show the Media Wedges, depicting the largest [Fig. 2] and the smallest [Fig. 1] patch dimensions. In principle, these two variants can be used for all manual measurement evaluations.

The user should make sure that the version of the Ugra/Fogra Media Wedge CMYK used on a proof is also actually suitable for the later evaluation using the available measuring device.

## Instructions for automatic evaluation

For the automatic evaluation of proofs, an entire range of measurement systems is available [for example from Techkon and X-Rite] and are part of daily production today. In order to make its use as simple as possible, only two variants of the Media Wedge are offered by Fogra. The user is advised to use measuring devices that are compatible with these layouts. In a transitional phase, users can still work with the different variants of the Media Wedge V2.2. As a rule, it is not advisable to use measuring devices for which it is necessary to cut off the Media Wedge from the proof for evaluation. A proof from which the Media Wedge has been cut off cannot be considered as contract-binding according to the specifications of Media Standard Print and ISO 12647-7. In case

of questions regarding the evaluation of measurements according to ISO 12647-7 and the use of the Media Wedge V3.0 please contact the manufacturer or supplier of the proofing systems, the evaluation software or the measuring device directly.

## 2.3 Standard version and file formats

In future, the standard Media Wedge package will consist of only two layout versions [Fig. 1 and Fig. 2] and will thus correspond to the requirements of the Reprint of the ProcessStandard Offset announced for 2008 by the bvdn as well as the Media Standard Print 2008. For users with special requirements with regard to the layout, individual configurations can be provided on demand.

Digital control media like the Media Wedge are basically reference files that accompany all steps of production individually or as part of documents. Such reference files reveal deviations and changes. In order to also be able to use the Media Wedge for the evaluation of the workflow at all times, the individual files in the data formats TIFF and EPS with a specific licence are required. The standard package of the Media Wedge Version 3.0 is therefore supplied as a combination. It always consists of four files of the Media Wedge. This enables the user to control the entire process chain. This is always advisable when new application programmes or new programme versions are released, or when other changes have been made to the workflow. From practical experience, it is also strongly recommended to test automated workflows [with monitored folders, etc.] or their modifications with the Media Wedge while setting them up, with regard to their colour output [TIFF and EPS together always]. The output resolution is always retrieved in the EPS file of the Media Wedge. The result is shown in the text field below the colour patches. In this manner the effects on the resolution [e.g. from monitored folders as also printer drivers] can be determined quite easily. An examination of the workflows as well as the proof systems is always necessary for a secure and contract-binding output of proofs and the matching of the image contents

with the measurement values of the Media Wedge. An examination of the output systems alone is not sufficient in order to avoid problem cases.

## 2.4 Special versions of the Ugra/ Fogra Media Wedge CMYK V3.0

The current version of the Media Wedge makes a minimum quality assurance possible while producing the proof and should be utilised by each business. The current design can be used in the standardized production of virtually all applications [proof printers as well as measurement systems]. Since process control will advance into ever expanding areas, there may be applications in the future, with which other patch sequences, patch sizes, etc. are required for an automated measurement. For this purpose, special variants will be created by Fogra [against payment]. At the time of the publication of this instruction manual no special versions are included in the standard package. If further layouts are required in the future, these will be described in an independent documentation.

# 3 Using the Ugra/ Fogra Media Wedge CMYK V3.0

## 3.1 Introduction

The primary function of the Ugra/Fogra Media Wedge CMYK is the monitoring of the digital proof ['proof']. If a proof is to be accepted as a binding copy for the production run, the colour values of the columns 1 to 24 must match the approved reference values within their prescribed tolerances. For standardized printing conditions, such values have already been published by the bvdm [1] as also in the ISO standards family 12647 [2].

The Ugra/Fogra Media Wedge can also be used for the quality control of other digital four colour output systems and digital printing machines like e. g. Xeikon, Agfa Chromapress, HP Indigo. We do not however recommend using the Media Wedge to control and supervise the production run, please use the digital Ugra/Fogra Print Control Strip instead.

The Ugra/Fogra Media Wedge should not be opened or modified in any way. Do not double-click the 'icon' that represents one of the files. You should instead import the control media through the functions of an application programme that can handle EPS or TIFF files.

Although the Ugra/Fogra Media Wedge was mainly developed to evaluate the digital proof, it can also be used to supervise changes that have an effect on the colour information. For this purpose, the Media Wedge of the digital input [if CMYK] is used up to the physical output [e.g. on paper]. Whenever the Ugra/Fogra Media Wedge CMYK is imported into a document, it is treated during the workflow like any other part of the document. This also applies to colour management and especially the effect of output profiles. It should be mentioned here that EPS files of many colour management systems cannot be altered.

The availability of the same colour patch definitions in the formats TIFF and EPS makes interesting comparisons possible. Under ideal circumstances, the outputs should match after image processing processes for TIFF and EPS.

The Ugra/Fogra Media Wedge CMYK should be used in the daily prepress process. This has been made easier since only 72 colour patches are now found on the strip.

## 3.1 File format of the Media Wedge

The Media Standard Print specifies that data must always be delivered as composite files in the PDF, TIFF/IT or TIFF formats. In the digital process chain, image data is generated using scanners or digital cameras and passed on as TIFF files in accordance with the specifications of the Media Standard Print. For these reasons, the Media Wedge is normally supplied as a TIFF file or employed by users in TIFF file format. The Media Wedge can thus be easily integrated into a typical workflow in all popular user programmes [for example InDesign, Quark, etc.]. This can be done by means of the usual import and/or placing functions for TIFF files. Should questions or problems crop up in this connection, the handbooks of the respective application programmes and recommendations of the manufacturers should be followed. However, please note that the Media Standard Print requires that file formats of user programmes, i.e. 'open' files [for example InDesign, Quark, Photoshop, etc.] should be avoided during data exchange. It is recommended to carry out data exchange of image data using the TIFF data format or from complete documents in the PDF data format.

## 3.2 The Media Wedge and standardized print production in accordance with Media Stand- ard Print

The Media Wedge is designed to monitor proofs for colour reliability in standardized printing processes. Characterised reference printing conditions are available for the following output processes for printing production.

## Instructions for use [Ugra/Fogra Media Wedge CMYK V3.0]

Date of last change 1. 10. 2007		Screen ruling	Backing	Tone value increase for 40 %	Data source	ISO Standard	Profile name, see also <a href="http://www.eci.org">www.eci.org</a>
offset printing and continuous forms printing, positive copy	Glossy or matte coated white woodfree, 115 g/m <sup>2</sup>	60/cm offset	white	13 %	FOGRA27	ISO 12647-2	ISOcoated.icc
	Glossy or matte coated white woodfree, 115 g/m <sup>2</sup>	60/cm offset	white	13 %	FOGRA39	ISO 12647-2 DAM 1	ISOcoatedV2eci.icc detaches FOGRA27
	Glossy coated web-fed offset [LWC], 60 g/m <sup>2</sup>	60/cm offset	white	16 %	FOGRA28	ISO 12647-2	ISOwebcoated.icc
	Glossy coated web-fed offset [LWC], 60 g/m <sup>2</sup>	60/cm	white	16 %	FOGRA40	ISO 12647-2	ISOsc_eci.icc
	Uncoated, white sheetfed offset, 120 g/m <sup>2</sup>	60/cm offset	white	19 %	FOGRA29	ISO 12647-2	ISOuncoated.icc
	Uncoated, slightly yellowish, offset, 120 g/m <sup>2</sup>	60/cm offset	white	19 %	FOGRA30	ISO 12647-2	ISOuncoated yellowish.icc
	Matte coated, white offset, 115 g/m <sup>2</sup>	60/cm continuous	white	19 %	FOGRA31	ISO 12647-2	ISOcofcoated.icc
	Uncoated, white offset, 80 g/m <sup>2</sup>	54/cm continuous	white	22 %	FOGRA32	ISO 12647-2	ISOcofuncoated.icc
Continuous forms printing, positive copy	Matte coated, white wood- free, 115 g/m <sup>2</sup>	54/cm	white	16 %	FOGRA33	ISO 12647-2	FOGRA33.icm
		60/cm	white	19 %	FOGRA31	ISO 12647-2	ISOcofcoated.icc
	Uncoated, white offset, 120 g/m <sup>2</sup>	54/cm	white	22 %	FOGRA32	ISO 12647-2	ISOcofuncoated.icc
		60/cm	white	25 %	FOGRA34	ISO 12647-2	FOGRA34.icm
Continuous forms printing, negative copy	Matte coated, white wood- free, 115 g/m <sup>2</sup>	54/cm	white	22 %	FOGRA35	ISO 12647-2	FOGRA35.icm
		60/cm	white	25 %	FOGRA37	ISO 12647-2	FOGRA37.icm
	Uncoated, white offset, 120 g/m <sup>2</sup>	54/cm	white	28 %	FOGRA36	ISO 12647-2	FOGRA36.icm
		60/cm	white	31 %	FOGRA38	ISO 12647-2	FOGRA38.icm
Newspaper printing	Offset Newsprint on News- shade	40/cm	white	26 %	IFRA26	ISO 12647-3	ISOnewspaper26v4.icc
		40/cm	black	26 %	IFRA26	ISO 12647-3	not recommended by IFRA and Fogra
		40/cm	black	30 %	IFRA30	ISO 12647-3	not recommended by IFRA and Fogra
		40/cm	white	30 %	IFRA30	ISO 12647-3	ISOnewspaper30v4.icc
Gravure printing	LWC paper	70/cm	white		PSR	ISO 12647-4	PSRgravureLWC
	SC paper	70/cm	white		PSR	ISO 12647-4	PSRgravureSC
	HWC paper	70/cm	white		PSR	ISO 12647-4	PSRgravureHWC
	MF paper	70/cm	white		PSR	ISO 12647-4	PSRgravureMF
Screen prin- ting, GC2_CO	Colour gammut class 2, conventional UV and water based, air-seasoned inks	30/cm	black	16 %	FOGRA9	ISO 12647-5	
SWOP	Web-fed offset on LWC, 70 g/m <sup>2</sup> , negative copy	52/cm	black	16 %	SWOP	ISO/DIS 12647-2	<a href="http://www.swop.org">www.swop.org</a>

Tab. 1: Standardized printing conditions, for which the Media Wedge V3.0 can be used.



### 3.3 The Media Wedge and the NON-standardized printing conditions

If the Media Wedge is used for non-standardized printing conditions, then the necessary target values should first be investigated through a test print. Non-standardized printing conditions are, e.g., if foils or coloured papers are printed, whose colour coordinates clearly deviate from the standardized specifications of the standards. First, a printing test should be carried out with a test chart [for example ISO 12642 [4]] along with the Media Wedge. During this, the used materials [printing ink set and paper], the screening type and the printing condition [inking, spreading and tone value increase] should be determined. In addition, the plate making [5] and the printing machine [6] should be brought up to a defined condition that is achievable at any time. The proper condition of CtP systems and printing machines should be checked using test forms [for example the Fogra CtP test form [5] und the Fogra Damping Control test form [6]] and the findings should be documented. The printed sheets should be evaluated after drying. 50 specimen sheets with stable printing conditions should be obtained for this purpose [approximately 1000 sheets after arriving at the desired inking and tone value increase] and at least 20 sheets are to be evaluated colorimetrically. The target values for the Media Wedge are arrived at after a determination of average as well as an additional smoothing or interpolation of the determined CIELAB measurement values where necessary. In this manner, the necessary characterization values are also generated, and yield the basis for the profile of this printing condition for use in the colour management.

### 3.4 The Media Wedge and the contract proof

The Media Standard Print specifies that an Ugra/Fogra Media Wedge CMYK-TIFF must be part of a contract proof. The Media Wedge may on no account, not even for the purpose of the evaluation by measurement, be separated from the actual proof. If it is necessary to sepa-

rate the Media Wedge from the proof for the chosen measurement process, then a second Media Wedge must be present on the proof for it to be stucked on that proof. The colour values of the Media Wedge must correspond with the reference values of the pertinent printing process.

File name and date must be declared in the footer of the proof as well as all other data that is required according to ISO 12647-7 [3].

An approximate visual examination can be carried out using the so-called inking standards [7]; the Media wedge is printed there for each case. The Media Wedges of the proof and the inking standard appropriate for the paper type are compared with one another on a white substrate. Preferably, a matching lamp [5000 K according to ISO 3664 [8]] should be used. The influence of the surroundings should be minimized using masks made of gray board.

### 3.5 Non-periodic [FM] screens

The Ugra/Fogra Media Wedge CMYK-TIFF can be easily combined and exposed with all FM screens. The EPS file can also be combined and exposed with FM screens without difficulty, as long as it does not involve the screening programme 'Velvet Screen'. General information regarding the topic screens [for example their creation and historical background], but also about each individual screen and the technical performance data can be obtained from the publications [9] [10]. Instructions in Section 3.3 should be followed in case of using the Media Wedge with FM screening.

### 3.6 Monitoring the workflow

The Ugra/Fogra Media Wedge CMYK-TIFF should be present on each proof for quality assurance. To avoid disruptions in production or the generally complex search for errors, it is most advisable to carry out an examination of the new components when putting them into service [software updates, installation of new hardware and/or software]. Combining it with a periodic system supervision can be absolutely meaningful. The

goal of the periodic system supervision is to test all the workflows and all components involved in the production for their condition and suitability with regards to resolution and colour rendering. In contrast to a periodic quality assurance, not just the actual condition is tested here; the standard maintenance, service and cleaning jobs have been done already. After completing the jobs, a workflow-related system examination is carried out. In case deviations are noticed in this examination, then a calibration and correction of the components and systems is necessary, until the set quality level is attained again.

### 3.7 Media Wedges integrated in RIPs

In addition to the Media Wedge licensed from Fogra, RIPs or proofing systems are now available, in which the Media Wedge has been included or integrated. Please note that the evaluation of these Media Wedges provides information about the RIP or proofing system. Please refer to the notes in Section 3.6 for details about the workflow, data transfer, etc.

## 4 Evaluating the Ugra/Fogra Media Wedge CMYK V3.0

This section explains how to evaluate the Media Wedge V3.0 with the help of an example. As of now, many proofing systems and evaluation programmes are available for using the Media Wedge. Please contact the concerned suppliers and manufacturers directly with your queries about use and correctness in each individual case.

### 4.1 Patches to be evaluated in the Media Wedge V3.0

The tolerances of the ISO-Norm 12647-7 [3] are valid for deviations from reference values in the Ugra/Fogra Media Wedge patches. They are identical for

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all printing processes and printing conditions:

- The CIELAB colour differences of the primary colours black [Patch A21], cyan [Patch A1], magenta [Patch A6] and yellow [Patch A11] to the respective target value shall not exceed  $\Delta E_{ab}^* = 5$ .
- The median value of all CIELAB colour differences [Patches A1 to C24] shall not exceed  $\Delta E_{ab}^* = 3$ .
- The maximum value of the CIELAB colour differences [Patches A1 to C24] shall not exceed  $\Delta E_{ab}^* = 6$ .
- The paper simulation [Patch C21] shall not exceed  $\Delta E_{ab}^* = 3$ .
- The hue of the primary colours [Patches A1, A6, A11, A21] shall not exceed  $\Delta H^* = 2.5$ .
- The hue deviation of the chromatic grey patches [Patches B16 to B21] shall not exceed  $\Delta H = 1.5$ .

Uniform measurement conditions must prevail in order to be able to share the results of colour measurements correctly. These are clearly defined in ISO 13655 [11] for the printing industry:

- Measurement geometries 0°/45° or 45°/0°
- Standard colorimetric observer for 2° [independent of the measurement patch dimensions]
- Illuminant D50 [5000 K]
- CIELAB colour system, the three measurement values  $L^*$ ,  $a^*$ ,  $b^*$  should be quoted
- Matte white substrate under the sample
- Matte black substrate under the test for the process control in the production run with a colour density of approx. 1.5
- No polarisation
- The colour difference is to be calculated in accordance with the CIELAB difference formula based on DIN ISO [11]:  $\Delta E_{ab}^* = (a^2 + b^2 + c^2)^{1/2}$

### 4.2 Exemplary use of the Media Wedge with colour measuring devices of the company TECHKON

The measuring devices of the company TECHKON are suitable for the colorimetric evaluation of control strips:

- the handheld Scan-Spectrometer RS 800 [Automatic measurements],

- the spectrophotometers SP 810/820/830 [Individual patch by patch measurements],
- the spectral densitometer SD 620 [Individual patch by patch measurements; preferably the model without polarisation filters].

The Scan-Spectrometer RS 800 is able to measure the layouts of the Media Wedges V 3.0 and V 3.0a with the same quality and reliability during automatic measurement. The direct transitions between the measurement patches are reliably recognized, and the separating lines in the layout of V3.0a are reliably ignored; comparative measurements in this regard between the different layouts in individual and scan measurements yielded average colour deviations of at the most  $\Delta E_{ab}^* = 0.4$ .

#### Settings in TECHKON EXChange 2000 for data transfer

To begin with, please execute an automatic recognition of the measurement device on the COM port for measuring the Ugra/Fogra Media Wedge. The following settings should be made in EXChange 2000:

- Measurement mode: Lab[CIE  $L^*a^*b^*$ ]
- Illuminant: D50
- Angle: 2°

Additional settings need to be made for the RS 800 as compared to SD 620 and SP 810/820/830 for scanning:

The option 'Transferred position for each scanning measurement' under the menu

item 'Settings' in the window 'Options RS 800' should be set to OFF. The Media Wedge parameters should be entered at the menu item 'Scanning measurement' according to layout and output measurement:

- Scanning length [mm]: here the length of the Media Wedge [in case of three row layouts the length of a row] should be measured. One more patch width [rounded up to the whole mm] should be added to it and the sum should be written in the screen mask.
- Patch width [mm]: here the actual width of the Media Wedge [thus not the scan length!] should be divided by the number of measurement patches per line and entered accurately as a value with up to 2 decimal places into the screen mask.

Further, the following options need to be set for all devices:

- In 'Profile list': Horizontal
- In 'Profile settings' – the density options 'Transfer all values': OFF

#### Measurement

After setting the options mentioned above, the colour measuring device must be calibrated before measurement of the Media Wedge can begin. The specifications of the manufacturer or the handbook of the particular measurement device should be followed. The cursor is placed in the first cell [ $L^*$ ] of the green Excel table at the beginning

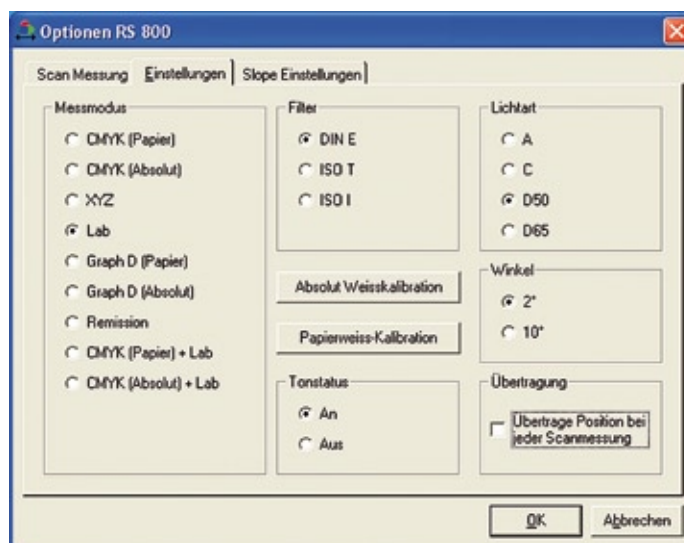


Fig. 4: Settings in Techkon EXChange 2000.



of a measurement. In case of individual measurement, the cursor automatically jumps after the transfer of each measurement value into the first cell of the next row; in case of automatic measurements with the RS 800, to the end of the completed table. In case of three-row Media Wedge layouts, filling out of the table is automatically continued at the correct position in the table as soon as the transfer of the measurement values of the first row as also the second row of the Media Wedge is complete.

#### 4.3 Using the Media Wedge with colour measuring devices of the company X-Rite

The company X-Rite offers different applications to evaluate Media Wedges. The following measuring devices are suitable for evaluating the Ugra/Fogra Media Wedge:

- SpectroEye [Individual measurement]
- Spectrolino [Individual measurement]
- Spectrolino/SpectroScan [Automatic measurement, XY-table]
- Eye-One Pro [Individual measurement and scanning measurement]
- SPM [Individual measurement]

Interested users should directly contact the company X-Rite or visit [www.x-rite.com](http://www.x-rite.com).

## 5 General information about colour management

This term describes methods for the maintenance as well as the regulated adjustment of colour information in the work process from the original up to printing. These methods can be used very successfully in order to separate RGB data for output in printing or to optimally adjust digital proofing devices for the later production run. The method of producing proofs from CMYK data sets using ICC colour management and subsequently evaluate them with the Ugra/Fogra Media Wedge CMYK-TIFF is demonstrated below.

The CMYK image data set to be output on the proof printer is converted along with an Ugra/Fogra Media Wedge CMYK-TIFF from the CMYK colour space of the production run into the CMYK colour space of the proof printer. For this, the following selections are made in the application programme used [14].

- The reference printing profile of the printing condition of the production run is valid as the source profile. This profile must always be delivered with the data in accordance

with Media Standard Print [1]. If it is however not available, another profile for the same printing condition should be selected. In addition to the profiles provided by Fogra [available on the Fogra website: [www.fogra.org](http://www.fogra.org)] other profiles are available, for example, from ECI [www.eci.org].

- The ICC profile of the proof printer for the substrate and the colour medium currently used is valid as the target profile.
- The transformation mode ['Rendering Intent'] selected is 'absolutely colorimetric', if the printing substrate does not match the production run substrate. Otherwise, 'relatively colorimetric' is selected.

The ICC profile of the proof printer used earlier is created as follows on the basis of a so-called characterization table, based, for example, on ECI 2002 [4], which is obtained with a CMYK test form as the data set: the test form is output on the proof printer, whereby the test form should show the same screen angles and screen frequencies as are used in the printing process being simulated. This is useful even if the proof printer cannot simulate real screen dots. The settings for the colour black should also be chosen just as they had been chosen for the creation of the output profile for the production run. The test form printed on a substrate matching the production run paper is then measured colorimetrically, i.e. 'Geometry 45°/0° or 0°/45°, D50, 2° observer, CIELAB system, white substrate.' The CIELAB values obtained are compared with CMYK data set values in table form. The ICC profile of the proof printer is then created from this characterization table using a profile tool.

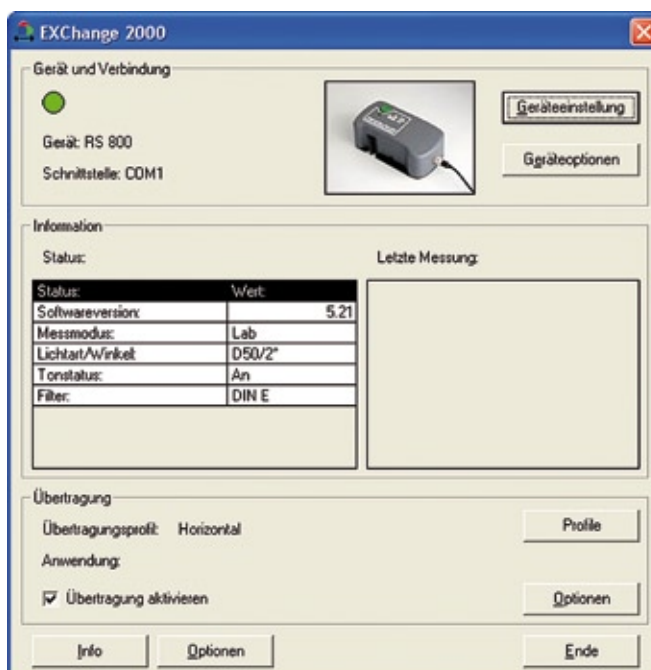


Fig. 5: Correctly set parameterisation in Techkon EXChange 2000.

## 6 Scope of delivery and legal framework

### 6.1 What are the contents of the CD-ROM?

# Instructions for use [Ugra/Fogra Media Wedge CMYK V3.0]

The CD-ROM with the Ugra/Fogra Media Wedge CMYK contains the files of the Media Wedge in the file formats TIFF and EPS as well as the instruction manual in a PDF file. The Media Wedge with the extension 'EPS' is the Media Wedge in the vector format and the files with the extension 'TIFF' is the Media Wedge in the bitmap format. On receipt, please check whether all files are present on the CD and whether the username is correct. In case of an error or missing files, please contact Fogra immediately. The Ugra/Fogra Media Wedge CMYK is always supplied for Macintosh and Windows operating systems. A separation based on operating systems is necessary only on the basis of licensing laws.

## 6.2 What is the legal framework of the control strip be used?

On page 11 of this instruction manual you will find a licence contract that regulates the contractual framework for the use of the Ugra/Fogra Media Wedge CMYK. It is important to point out a few items in particular:

The Ugra/Fogra Media Wedge CMYK is fundamentally sold only as single user version, i.e. the licence does not permit multiple, simultaneous use but only single use on one single computer.

Thus, in larger businesses, separate licence versions must be bought for each workplace or each computer in case of parallel use. In case of the Ugra/Fogra Media Wedge CMYK being used by representatives, service and maintenance personnel, each employee must be equipped with a separate license. Each sharing of the Ugra/Fogra Media Wedge CMYK as a stand-alone file implies a violation of the licence contract and thus constitutes illegal use.

It must be pointed out that on the basis of changes occurring continuously in prepress; adaptations to the Ugra/Fogra Media Wedge CMYK will be carried out by Ugra and Fogra, so as to avoid problems that may emerge. Hence, an unrestricted service will not be offered by Ugra/Fogra for obsolete versions of the Ugra/Fogra Media Wedge CMYK.

It may be mentioned further that each modification and/or removals of sequences of the code as also the refer-

ence values in the Excel file as well as their utilisation, sharing or commercial exploitation without prior written consent from Fogra is not permitted and represents a violation of the licence agreement.

## 7 References

- [1] N.N.:  
MedienStandard Druck 2007 –  
Technische Richtlinie für Daten  
und Prüfdrucke  
Wiesbaden: Bundesverband Druck  
und Medien e.V., 2007 –  
Art.-Nr. 86034
- [2] Normenserie ISO 12647  
Graphische Technik – Prozess-  
kontrolle für die Herstellung von  
gerasterten Farbauszügen, Prüf-  
drucken sowie An- und Auflagen-  
druck
- [3] Standard ISO 12647-7: 2007  
Graphic technology – Process  
control for the production of half-  
tone colour separations, proof and  
production prints – Part 7: Proo-  
fing processes working directly  
from digital data
- [4] Standard ISO 12642: 1996.  
Graphic technology – Prepress  
digital data exchange – Input data  
for characterization of 4-colour  
process printing  
Bezug: Beuth-Verlag, 10772 Berlin
- [5] SCHMITT, U.:  
Qualitätssicherung der Ausgabe-  
systeme bei Computer-to-Plate  
München: Fogra, 2002 [73] –  
Praxis Report
- [6] SCHMITT, U.:  
Does your printer have the neces-  
sary tools to ensure optimal prin-  
ting?  
München: Fogra, 2008 [10] –  
Extra
- [7] N.N.:  
Altona Test Suite Anwendungs-  
paket  
Wiesbaden: Bundesverband Druck-  
und Medien e.V. [bvdM], 2003
- [8] Standard ISO 3664: 2000  
Viewing conditions for graphic  
technology and photography
- [9] N.N.:  
Ugra/Fogra Velvet Screen,  
Version 2.0  
St. Gallen/München: Ugra/Fogra,  
2001 – Gebrauchsanleitung
- [10] DOLEZALEK, F.; PIETZSCH, R.:  
Frequenzmodulierte Feinraster in  
Kopie und Offsetdruck  
Wiesbaden: Bundesverband  
Druck e.V., 1996
- [11] Norm DIN ISO 13655: 2000  
Graphische Technik – Spektrale  
Messung und farbmetrische  
Berechnung für graphische  
Objekte
- [12] Norm DIN 16536-1: 1997  
Farbdichtemessung an Drucken –  
Teil 1: Begriffe und Durchführung  
der Messung
- [13] Norm DIN 16536-2: 1995  
Farbdichtemessung an Drucken –  
Teil 2: Anforderungen an die Meß-  
anordnung von Farbdichtemess-  
geräten und ihre Prüfung
- [6] KRAUSHAAR, A.:  
How about the colour reference in  
digital printing?  
München: Fogra, 2008 [16] –  
Extra

## Licence Agreement

The following is hereby agreed between

Fogra  
Graphic Technology Research  
Association, Streitfeldstraße 19,  
81673 Munich, Germany,  
referred to hereinafter as the licensor  
– on the one hand –

and

the purchaser of the software,  
referred to hereinafter as the licensee  
– on the other hand –

### § 1 Subject of the contract

The subject of the present software licence agreement is the computer program [the software] recorded on the data carrier [the diskette]. This also includes all updates of this software which the licensor subsequently makes available to the licensee. The licensor is entitled, but not obliged, to produce updates of the software at his own discretion.

### § 2 Licence

The licensor grants to the licensee, for the duration of the present contract, a simple licence to use the software on a single computer system at a location of his choice. If this single computer system is a multi-user system, this right of use applies to all the users of this one system.

The licensee is permitted to transfer the software in physical form [i.e. stored on a data carrier] from one computer system to another, provided that the software is always used only on a single computer system.

On the other hand, the licensee is not permitted to transfer the software from one computer system to another via a network or a data channel.

The licensee is not permitted to alter, translate, or – by reverse engineering – develop the software, or to produce packages derived from the software. In addition, the licensee is prohibited from copying, or from otherwise reproducing, the software either wholly or partially, whether in its original or in an altered form, or in a form which is mixed together with, or included in, other

software. The licensee is permitted to create a single backup copy.

### § 3 Transfer and sub-licences

The licensee is not authorised to transfer the licence to third parties, to issue sub-licences, or in any other way to render the software to be used by third parties, unless the licensor gives his express permission for the software to be transferred to the third party.

### § 4 Obligations to provide protection

The licensee undertakes that he will in no way change the licensed software without the express agreement of the licensor. The licensee further undertakes that he will store the licensed software safely, so that access by unauthorised persons, and in particular copying, are prevented. Software Licence Agreement In the event that a backup copy is created, the licence holder has to attach to the backup copy, or include in the backup copy, the copyright notice which appears on the label of the original data carrier supplied.

### § 5 Accompanying documentation

The licensor makes available to the licensee a set of accompanying documentation in the form of a user's guide to the software which forms the subject of the contract. The licensee is not authorised to reproduce – in any way – either the entire accompanying documentation or any extract from it.

### § 6 Right of inspection

The licensee grants to the licensor the right either himself to carry out an inspection, or to cause third parties to carry out an inspection, of whether the licensee's contractual obligations are being observed at the licensee's premises.

### § 7 Guarantee

Should the data carrier which carries the licensed software be faulty, the licensee may, during a guarantee period of 6 months from the time of delivery, demand that a replacement delivery be made. For this purpose he must return to the licensor, or to the dealer from whom the software was obtained, the diskette, as well as any backup copy that

may have been made, the accompanying documentation which was supplied to him, and a copy of the invoice or of the receipt.

If a fault is not eliminated within an appropriate period by means of a replacement, the purchaser may, in accordance with his own choice, demand either that pecuniary remuneration be made or that the contract be cancelled.

### § 8 Limitations of liability

1. The licensed software is a standard package. Consequently, the licensor cannot guarantee that the licensed software meets the licensee's requirements. Moreover, he cannot in the nature of the matter be liable for ensuring that the licensed software is free of faults or that any faults that may exist can be corrected. As a result, the licensor is not liable for indirect damage or consequential damage arising from faults in the licensed software.

The licensor's liability is limited to liability for fraudulently withholding information concerning deficiencies.

2. The licensor does not know of any third parties' rights which would impair the licensee from using the software. However, the licensor is not liable for the question of whether the licensed software is free of third parties' rights.

If – with the licensed software being used in accordance with the agreement – any third parties assert rights against the licensee, the licensor will grant to the licensee, at the licensee's request and the licensee's expense, every possible assistance in defence against the claims being made against the licensee.

### § 9 Period of duration of the agreement

The agreement is concluded for an indefinite period. The licensee may at any time give notice to terminate the contractual relationship, there being a six months' period of notice ending at the end of a calendar year.

### § 10 Contractual conditions

Both contractual partners may terminate the contract for specific reasons, particularly

1. if the licensee is using the licensed software on more than one computer system,
2. if the licensee inadmissibly copies the licensed software in any other way or
3. if a contracting party commits other breaches of an essential contractual obligation and a period of 10 days has elapsed after the issuing of a notice by the other party without effect.

#### *§ 11 Rights after the termination of the agreement*

1. All the licensee's rights to use the software which has been made available to him end when the contractual relationship ends.
2. The licensee undertakes – within one week of the contractual relationship coming to an end – to destroy the software which has been made available to him, to destroy any backup copy which may have been created, and also to destroy all the documents concerning the software, especially the documentation included in the delivery.

#### *§ 12 Saving clause*

Should a provision of the present contract be or become invalid, or should the contract contain a hiatus, the legal validity of the remaining provisions remains unaffected by this. Instead of the invalid or missing provision, a valid provision which, in terms of economics, comes the closest to the provision desired by the parties is deemed to have been agreed upon.

#### *§ 13 Amendment of the Agreement*

Any amendment to the present agreement must take written form in order to be valid. No oral agreements have been reached or will be regarding the present agreement.

#### *§ 14 Place of jurisdiction, and applicable law*

For purchasers residing outside Switzerland, it is agreed that the Patent Litigation Chamber of the "Munich I Landgericht I" [Regional Court] is competent for all disputes arising from the present agreement. For this purpose the law of the Federal Republic of Germany is applied.



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