



CINECO DIGITAL FILM FORMATS AND PRACTICES

(June 2010)

Hard-disk and tape formats:

1. IEEE-1394a or IEEE-1394b (400 or 800 M-bit/s) “**Firewire**“ or **USB** mobile hard-disk. FAT16, FAT32, NTFS (**Preferred**) or HFS (Macintosh) formatted.

2. IDE Hard-disk up to 1 Tera-Byte for PC (**Preferred**) or Macintosh, formatted as:

NTFS 4 for Windows NT version 4.0 service-pack < 5 (please state if you use NT4 SP < 5 !!)
NTFS 5 and 6 for Windows 2000 and WINDOWS XP and Windows Vista
FAT16 for Windows NT, Windows 95/98 and MS-DOS.
FAT32 for Windows 95/98 , Macintosh and LINUX (Files < 2 Giga-Byte)
HFS for Macintosh, with no more than 1500 frames in 1 folder (safe MAC limit).

The IDE hard-disk may be mounted in a tray. This hard-disk may be taken from the supplied tray and mounted in a tray of our own, if necessary.

3. SCSI hard-disk up to 250 G-Byte (**NOT Preferred**), formatted as:

NTFS 4 for Windows NT version 4.0 service-pack < 5 (please state if you use NT4)
NTFS 5 and 6 for Windows 2000 and WINDOWS XP
FAT16 for Windows NT, Windows95/98 and MS-DOS
FAT32 for Windows 95/98 and LINUX
HFS for Macintosh, with no more than 1500 frames in 1 folder (safe MAC limit).

This SCSI hard-disk may be mounted in a RORKE DATA Kingston-tray with NARROW, WIDE or LVD-160/320 SCSI. An external box with either a 50-pins CENTRONICS SCSI , 50-pins NARROW SCSI or 68-pins WIDE SCSI connector with a cable to a NARROW or WIDE SCSI plug is even better.

4. DVD-R(W) or DVD+R(W) formatted as UDF or DVD-ROM according to the Mount Rainier standard.
CDROM CD-R(W) formatted as ISO 9660 or HFS.

CD-ROM and DVD are for small series of frames only!

We DO NOT rip DVD-video for copyright reasons!

5. Ultrium LTO-2 or 3 computer tape-format read and write. 400 G-byte per tape or 800 G-byte max. per tape, compiled into a standard TAR file (NOT Preferred) or formatted as Veritas Backup-Exec version 9 (**Preferred**).
6. DLT-80 tape (**NOT Preferred**) with all frames compiled into a standard TAR file.

All hard disk cabinets, tapes, cables and plugs must be labeled with company name.

Tape formats, Macintosh-formats and hard-disk formats, like USB-1 and USB-2 (both too slow for Arrilaser) or unlabeled items may incur extra handling-costs!



File formats:

1. 8-bits per color formats:

Targa	24(32)-bits RGB(A) per pixel	NO COMPRESSION	(* .TGA)
TIFF	24(32)-bits RGB(A) per pixel	NO COMPRESSION	(* .TIF)
PNG	24(32)-bits RGB(A) per pixel	any supported compression	(* .PNG)
SGI	24(32)-bits RGB(A) per pixel	raw or run-length-encoded	(* .SGI)
DPX	24-bits RGB per pixel	linear or logarithmic	(* .DPX)
OMF	Avid's exchange format (PC)	PAL video resolution only (720x576) pixels)	(* .OMF)

Please supply the codec for PC, when delivering OMF, as codecs for Avid mutate!

MOV	Apple's Quicktime multimedia	up to video resolution, uncompressed	(* .MOV)
AVI	Window's multimedia format	up to video resolution, uncompressed	(* .AVI)

For Silicon Graphics, 8-bits per color frames should have a file gamma of 1.7 . A file gamma of 2.2 is used for frames coming from video, telecine, or PC at 8 bit/color. A file gamma of 1.8 is used in the Apple world at 8-bits/color, but at gamma 2.2 intended for Video.

Please consult Cineco Digital Film, if you want to use a different file-format.

Just to be sure, please request a couple of test frames from Cineco Digital Film, with which you can determine the correct file-gamma and 18%-grey pixel-values for your system. We will deliver these test- pictures to you by e-mail packed in a ZIP file, or burnt onto a CD-ROM.

2. 10-bits per color format:

Kodak Cineon	30-bits RGB per pixel LOGARITHMIC ONLY	(* .CIN)
DPX	30-bits RGB per pixel linear or logarithmic	(* .DPX)

Cineon is our default file-format. A film-to-film job can only be done correctly when using CINEON or DPX as transport-format, in which the complete exposure-range of negative film is always stored in logarithmic form. Please supply us black & white points, gamma and soft-clip amount used, when rendering Cineon-files from a linear job (default: black 95, white 685, film-gamma 0.6 and soft-clip 0).

DPX may contain linear or logarithmic data (DPX is actually a superset of Cineon).

When using DPX, please state if the data is linear or logarithmic.

3. 16-bits per color format:

Silicon Graphics (SGI)	48/64-bits RGB(A) per pixel	(* .SGI)
TIFF	48/64-bits RGB(A) per pixel, no compression	(* .TIF)

N.B. 16-bits per color file-formats are always considered linear (file-gamma = 1).



Frame Numbering:

Please name the files of your frame-sequence as follows:

XXXXNNNN.EEE or **XXX.NNNNNNNN.EEE**

4/5 letters (XXXX), 5/4 numbers (NNNN), a dot, 3 letters extension (EEE) for the DOS 8.3 convention.

or n letters (XXX...X), a dot, 8 numbers (NNNNNNNN), a dot, 3 letters extension (EEE), like:

PIET0123.TGA or **JAN00123.TGA** or **This_is_a_frame.00000123.dpx** (NO SPACES!!)

The Numbering MUST be continuous (NO HOLES, don't skip numbers).

Always left-fill your numbers with zeros and use an extension (also for MAC users).

Each folder (directory) on the disk may contain one named frame-sequence only.

For optimum quality, use one frame format only, for each complete layer of the Job.

2/4K Frame-geometries:

Full Aperture	1.31:1	2048 x 1556 pixels	NO Sound
Full Frame	1.33:1	2048 x 1536 pixels	NO Sound
FULL 2.35:1	2.35:1	2048 x 871 pixels	Sound
Cinemascope (2:1 squeezed)	2.35:1	1828 x 1556 pixels	Sound
Academy	1.37:1	1828 x 1332 pixels	Sound
Academy European Widescreen	1.66:1	1828 x 1101 pixels	Sound
Academy 16:9 Widescreen	1.78:1	1828 x 1028 pixels	Sound
Academy AmericanWidescreen (FLAT)	1.85:1	1828 x 988 pixels	Sound
Full Aperture	1.31:1	2151 x 1634 pixels	NO Sound
Full Frame	1.33:1	2151 x 1613 pixels	NO Sound
FULL 2.35:1	2.35:1	2151 x 915 pixels	Sound
Cinemascope (2:1 squeezed)	2.35:1	1920 x 1634 pixels	Sound
Academy	1.37:1	1920 x 1399 pixels	Sound
Academy European Widescreen	1.66:1	1920 x 1156 pixels	Sound
Academy 16:9 Widescreen	1.78:1	1920 x 1080 pixels	Sound (HDTV 16:9)
Academy AmericanWidescreen (FLAT)	1.85:1	1920 x 1038 pixels	Sound

When recording-out to Fuji 4503-CI or 4511-RDI on our Arrilaser, please state if the picture is to be recorded at Academy-With (used WIT SOUND) or at Full-With (NO SOUND).

For all aspect ratios, use **EXACTELY 2048, 1828 or 2151, 1920 pixels horizontally (width), and DO NOT EXCEED 1556 pixels vertically (Height) for 2048/1828 pixels, or 1634 pixels vertically for 2151/1920 pixels.**

When using 4K frames, multiply the number of pixels by 2.

Any other pixel combination may incur rendering costs!



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Hires scanning of Cine-film:

At Cineco we will scan your (super)16-mm or (super)35-mm original negative cine-film with our ARRISCAN scanner at resolutions up to 6K. The characteristics of the negative will be upheld perfectly, so the digitally scanned negative can even be intercut with the original negative without visible loss of sharpness, contrast and brilliance.

The main file-format used is DPX, which contains the full exposure range of the negative as pixels, with a color-resolution of 10 logarithmic bits per color-channel (RGB). The internal color resolution of the scanner is 14 linear bits per color-channel. We will deliver other file-formats (TIFF only) at extra cost; the (linear gamma 2.2 corrected) file color-resolution of the TIFF will then be 8- or 16 bit.

Using our OXBERRY Cinescan-6400 scanner we can also scan (super)16-mm, (super)35-mm and even 28-mm and 9.5-mm formats with or without the use of the Wet-gate technique. The OXBERRY scanner scans any desired selection of the picture frame Logarithmic ONLY at resolutions up to 3K (3072 x 2048 pixels). If need be, this selection can also optically be rotated, so no digital calculation losses will be incurred.

Normally we will scan the film at 2K resolution (see table on page 3).

The ARRISCAN will scan at speeds up to 8 frames per second; the OXBERRY is slower and scans at 2 seconds per frame.

The ARRISCAN is used for modern features and commercials for Cineco, while the OXBERRY is used for film-restoration or conservation at Haghefilm Conservation.

Scanning film yourself for film-to-film jobs:

When scanning film yourself for film-to-film jobs, please consult Cineco Digital Film, so you may calibrate your scanner to our Arrilaser Film recorder and film processing. We will assist you with the practices used, but we cannot advise you how to do the actual calibrating, as that expertise should be present in your facility. Please be prepared for a time consuming procedure. Responsibility for the quality of the scan and subsequent problems in the projected result, expressly lies with the scanning facility and the post house where the color correction and its calibration is done.

PAL-video blow-up to 35-mm film:

At Cineco we will perfectly blow-up PAL video to 35-mm film at 25 fps. Perfect in this sense is, that detail in the blown-up film result will never be higher than the detail in the original video!

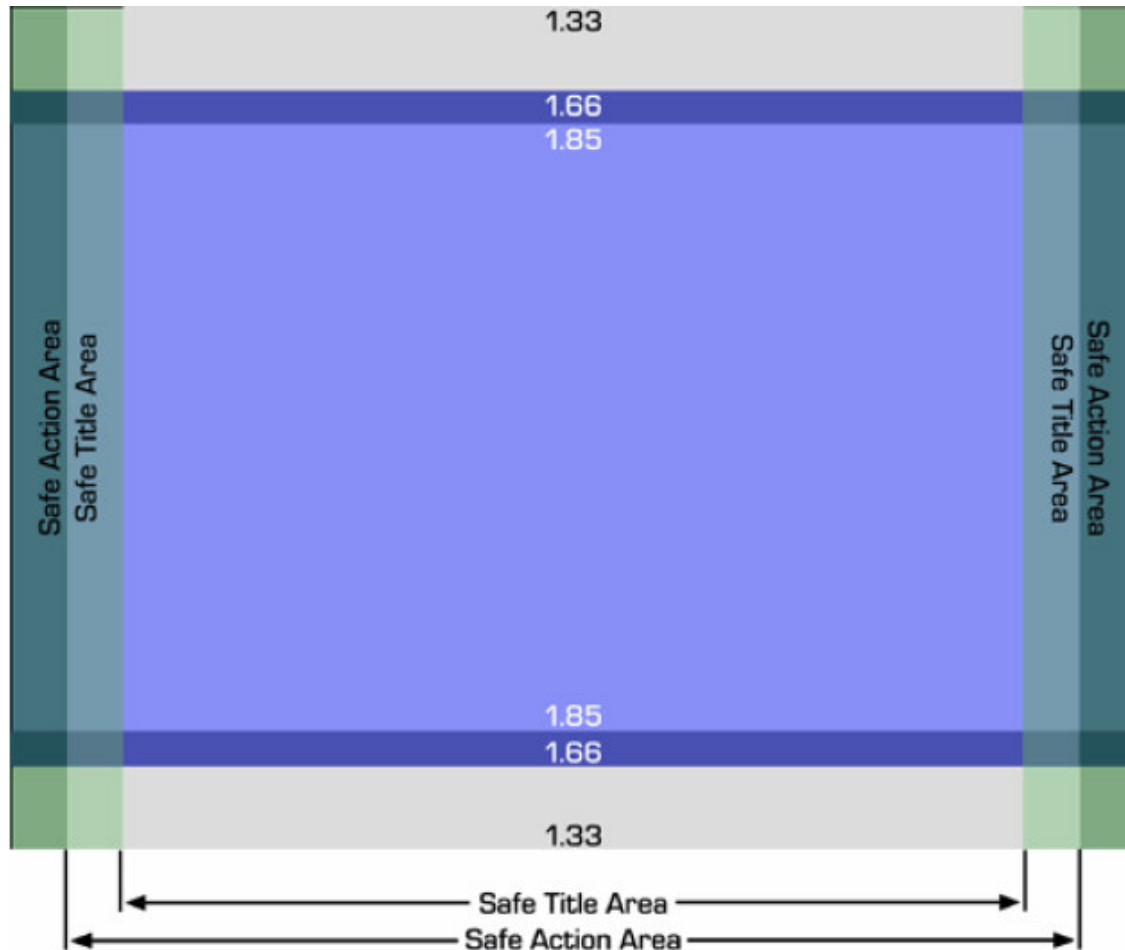
We will accept the complete (color corrected) video at Digibeta, Beta-SP or DV-tape. Video originating from Beta-SP and DV-tape have quality issues in noise and color rendition.

Video originating in a video-camera or generated by slow-motion effects in a video-edit, will have motion per video-field. Going to film we must reduce that to a motion per frame, using a process called de-interlacing, which will often introduce a certain amount of artificial motion-blur artifacts in the picture. Therefore, especially when using DV, shoot in progressive mode, where possible.

Also titles in the video will not render pleasantly on film, especially when the video titles are moving.

Scrolling or rolling titles are a good example here, as there are often interlacing (video) and opturation (film) issues. When such title sequences occur, we will always advise you to let us re-create those titles at 2K resolution at extra cost.

Frame geometries when blowing-up commercials from video to film:



When blowing-up 1.33:1 video to film, you'll have to take into account a safe-action area of 1.66:1 (the area within the action takes place) and a safe-title area which must be well within 1.85:1 (the area within all titles must be placed).

If your video is 16:9 (1.78:1), then your safe-action area will also need to be 1.78:1, while the safe-title area still must be well within 1.85:1. All these values need to be reckoned within the vertical sense.

If the height of the supplied video must be completely visible within the 1.85:1 aspect (commercials), we will reduce the size of the picture, so it will fall within 1.85:1 on film, leaving black at the sides.

Horizontally speaking, a safe-area of 5% is used for safe-action and a safe-area of 10% is used for the titles: 10% left and 10% right.

Cineco Digital Film will record the complete width of video (and other formats) to film. The height of the picture will be determined by the height of the original.

Please don't hesitate to ask Cineco Digital Film, when any questions arise.

Tel: +31-20-5685411 Fax: +31-20-5685400 Ask for Gerard or Antonie.
 e-mail: digitalfilm@cineco.nl ftp: <ftp://ftp.cineco.nl> (ask for access password).