

# Post-Production Terminology

**1080i** is the shorthand name for a category of video modes. The number *1080* stands for 1080 lines of vertical resolution, while the letter *i* stands for interlaced or non-progressive scan. 1080i is considered to be an HDTV video mode. The term usually assumes a widescreen aspect ratio of 16:9, implying a horizontal resolution of 1920 lines and a frame resolution of  $1920 \times 1080$  or about 2.07 million pixels, and a field resolution of  $1920 \times 1080 / 2$  (because it's interlaced) or about 1.04 million pixels.

**720p** is the shorthand name for a category of video modes. The number 720 stands for 720 lines of vertical resolution, while the letter *p* stands for progressive scan or non-interlaced. 720p is considered to be an HDTV video mode. The term usually assumes a widescreen aspect ratio of 16:9, implying a horizontal resolution of 1280 lines and a frame resolution of  $1280 \times 720$  or about 0.92 million pixels.

**60i** (interlaced; **50i** in Europe and Australia), is the standard video frame rate that has been in use for decades; it's what you see on your home TV, whether from a broadcast signal, rented DVD, or home camcorder.

**30p**, or 30-frame progressive, is a non-interlaced format and produces video at 30 frames per second. Progressive (non-interlaced) scanning mimics a film camera's frame-by-frame image capture and gives clarity for high speed subjects and a cinematic-like appearance. Shooting in 30p mode offers video with no interlace artifacts.

**24p** frame rate is also a non-interlaced format, and is now widely adopted by those planning on transferring the video signal to film. But film- and video-makers turn to 24p for the "cine"-look even if their productions are not going to be transferred to film, simply because of the "look" of the frame rate.

**Progressive segmented Frame (PsF)** is a High Definition video format used to store progressive content on interlaced media. Each progressive frame is segmented into two interlaced fields without interfield motion, or "combing". PsF is an alternative to 3:2 pulldown, wherein certain frames are "pulled down" across multiple fields, resulting in output with an irregular frame rate.

**Digital Betacam** (commonly abbreviated to *Digibeta* or *d-beta* or *dbc*) records a DCT-compressed component video signal at 10-bit YUV 4:2:2 sampling in PAL ( $720 \times 576$ ) or NTSC ( $720 \times 486$ ) resolutions at a bitrate of 90 Mbit/s plus 4 channels of uncompressed 48 kHz PCM-encoded audio. A 5th audio track is available for cueing, and a linear timecode track is also used on the tape.

**HD D5** uses standard D5 video tape cassettes to record HD material, using an intra-frame compression with a 4:1 ratio. HD D5 supports the 1080 and the 1035 interlaced line standards at both 60 Hz and 59.94 Hz field rates, all 720 progressive line standards and the 1080 progressive line standard at 24, 25 and 30 frame rates. Eight PCM audio channels sampled at 48 kHz, 20 bits per sample, are also supported. HD D5 has a data rate of 250 Megabits/second.

**HDCAM**, introduced in 1997, is an HDTV version of Digital Betacam, using an 8-bit DCT compressed 3:1:1 recording, in 720p or 1080i-compatible ( $1920 \times 1080$ ) resolution, and adding 24 and 23.976 PsF modes. The recorded video bitrate is 144 Mbit/s. Audio is also similar, with 4 channels of AES/EBU 20-bit/48 kHz digital audio. It is used for Sony's cinematic CineAlta range of products.

**HDCAM SR**, introduced in 2003, uses a higher particle density tape and is capable of recording in 4:4:4 RGB with a bitrate of 440 Mbit/s. The increased bitrate (over HDCAM) allows HDCAM SR to capture much more of the full bandwidth of the HDSDI signal ( $1920 \times 1080$ ). Some HDCAM SR VTRs (SR camcorders are not available) can also use a 2x mode with an even higher bitrate of 880 Mbit/s, allowing for a single 4:4:4 stream at a lower compression or two 4:2:2 video streams simultaneously. HDCAM SR uses the new MPEG-4 Studio Profile for compression, and expands the number of audio channels up to 12.

**DVCAM** (Sony), is a semiprofessional variant of the DV standard that uses the same cassettes as DV and MiniDV, but transports the tape 50% faster, leading to a higher track width of 15 micrometres. The codec used is the same as DV, but because of the greater track width available to the recorder the data are much more robust, producing 50% less errors known as dropouts.

Panasonic specifically created the **DVCPRO** family for electronic news gathering (ENG) use (NBC's newsgathering division was a major customer), with better linear editing capabilities and robustness. It has an even greater track width of 18 micrometres and uses another tape type (Metal Particle instead of Metal Evaporated). Additionally, the tape has a longitudinal analog audio cue track. Audio is only available in the 16 bit/48 kHz variant, there is no EP mode, and DVCPRO always uses 4:1:1 color subsampling (even in PAL mode). Apart from that, standard DVCPRO (also known as DVCPRO25) is otherwise identical to DV at a bitstream level. However, unlike Sony, Panasonic chose to promote its DV variant for professional high-end applications.

**DVCPRO50** is often described as two DV-codecs in parallel. The DVCPRO50 standard doubles the coded video bitrate from 25 Mbit/s to 50 Mbit/s, and improves color-sampling resolution by using a 4:2:2 structure. DVCPRO50 was created for high-value ENG compatibility. The higher datarate cuts recording-time in half (compared to DVCPRO25), but the resulting picture-quality is reputed to rival Digital Betacam, a more expensive studio format.

**DVCPRO HD**, also known as **DVCPRO100**, uses four parallel codecs and a coded video bitrate of 100 Mbit/s. Despite *HD* in its name, DVCPROHD downsamples native 720p/1080i signals to a lower resolution. 720p is downsampled from 1280x720 to 960x720, and 1080i is downsampled from 1920x1080 to 1280x1080 for 59.94i and 1440x1080 for 50i. Compression ratio is approximately 7:1. To maintain compatibility with HDSDI, DVCPRO100 equipment internally downsamples video during recording, and subsequently upsamples video during playback.

**CODEC** is a device or program capable of performing encoding and decoding on a digital data stream or signal. The word "codec" is a portmanteau of any of the following: 'Compressor-**Dec**ompressor', '**C**oder-**Dec**oder', or '**C**ompression/**Dec**ompression algorithm'.

**Offline editing** in film and television production is the process by which the raw footage is copied, and edited, without affecting the camera original film or tape. Once a programme has been completed in offline, the original media will be conformed, or on-lined, in the Online editing stage. It is what is often considered the 'creative' stage of the Post-production process.

**Online editing** is generally the final stage in a film or video production. When the offline editing is complete, the pictures need to be re-assembled, at full, or 'online' resolution. When this process is complete, then any visual effects, titles, captions and color correcting need to be applied to the program. The broadcast industry has many standards to which all programs must conform, so the online editor must ensure that all programmes meet with strict guidelines including levels of black, luminance, & chroma (saturation). Also aspect ratio correction and blanking width.

**3:2 pulldown** is the process of converting 24 frame/s material to 29.97 frame/s is known as 3:2 pulldown. It is accomplished in two steps. The first step is to slow down, or "pulldown" the film motion by 0.1%. This speed change is unnoticeable to the viewer, and makes the film travel at 23.976 frame/s.