



FRAME OF REFERENCE

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ASPECT RATIOS

1:2.40

Widescreen Aspect Ratio

1:1.85

American Theatrical Aspect Ratio

16:9
1:1.78

High Definition Television Aspect Ratio

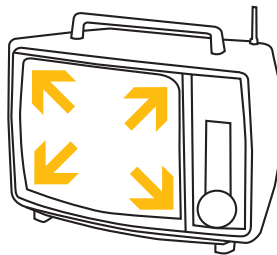
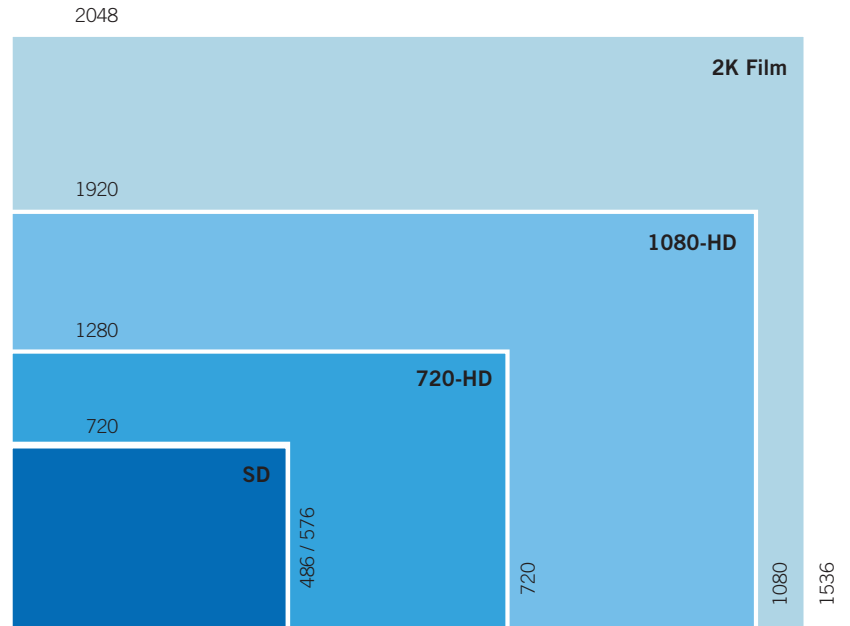
1:1.66

European Theatrical Aspect Ratio

4:3
1:1.33

Standard Definition Television Aspect Ratio

HD, SD, & 2K FRAME SIZES



STANDARD FRAME RATES

24fps	Standard frame rate for theatrical film
23.976fps	HD frame rate as well as film-to-tape transfer speed for American NTSC feature films
29.97fps	NTSC video/broadcast television
25fps	PAL video/broadcast television
50fps	50 fps HD format (Europe)
59.94fps	59.94 fps HD format/broadcast television

HD RESOLUTIONS AND FRAME RATES

Resolution	Aspect Ratio	Interlaced frames per second (fps)	Progressive fps
1280 x 720	16:9	24, 60	23.976, 24, 29.97, 30, 59.94, 60
1920 x 1080	16:9	25 (50i), 29.97 (59.94i), 30 (60i)	23.976, 24, 25, 29.97, 30

FILM GAUGES

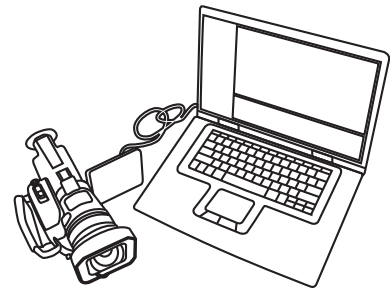
FILM GAUGES

Gauge	Perfs	Format	Counts
16/S16mm	20	Footage	40 frames/foot rollover: +39
		KEYKODE™	20 frames/KeyKode (2 counts per foot) rollover: +19
35mm	64	2 perf	32 frames/foot rollover: +31
		3 perf	64 frames/yard
			21 frames first foot rollover: +20
			21 frames second foot rollover: +20
			22 frames third foot rollover: +21
4 perf	16 frames/foot rollover: +15		
8 perf	8 frames/foot rollover: +07		
65mm	120	5 perf	24 frames/KeyKode rollover: +23
		8 perf	15 frames/KeyKode rollover: +14
		12 perf	10 frames/KeyKode rollover: +12
		15 perf (IMAX™)	8 frames/KeyKode rollover: +07

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For more information on KeyKode, please visit www.kodak.com

VIDEO STANDARDS

- **NTSC:** The TV standard prepared by the National Television Systems Committee for the US, Canada, Japan, Central America, half of the Caribbean and half of South America. NTSC video is a standard-definition format that is made up of 525 lines at 30 Hz. The number of active display lines per frame is 480.
- **PAL:** Phase Alternating Line is the TV format used in most of Western Europe, Australia, and other countries. PAL video is a standard-definition format that consists of 625 lines at 25 Hz and only refers to the way color signals are coded for broadcast purposes. The number of active display lines per frame is 576.
- **SECAM:** Sequential Couleur Avec Memoire (sequential color with memory) is the TV format used in France, Eastern Europe, and other countries. Like PAL, SECAM video is 625 lines at 25 Hz. The number of active lines per frame is 576.



TIME/FOOTAGE FOR VARIOUS FILM FORMATS (24 frames per second)

Time	Reg. 8mm	Super 8mm	16mm	35mm
10 sec.	3 feet	3 1/3 feet	6 feet	15 feet
30 sec.	9 feet	10 feet	18 feet	45 feet
1 min.	18 feet	20 feet	36 feet	90 feet
3 min.	54 feet	60 feet	108 feet	270 feet
5 min.	90 feet	100 feet	180 feet	450 feet
10 min.	180 feet	200 feet	360 feet	900 feet
20 min.	360 feet	400 feet	720 feet	1800 feet
30 min.	540 feet	600 feet	1080 feet	2700 feet

VIDEO DATA RATES/SAMPLING/FILE SIZES

	Resolution	Data Rate	Color Sampling	:60 sec	5 min	22 min	100 min
DV	DV25	25 Mbps	4:1:1 4:2:0	188 MB	940 MB	4.1 GB	18.8 GB
	DV50	50 Mbps	4:2:2	375 MB	1.8 GB	8.3 GB	37.5 GB
SD	IMX 30	30 Mbps	4:2:0	222 MB	1.1 GB	4.9 GB	22.2 GB
	IMX 40	40 Mbps	4:2:0	296 MB	1.5 GB	6.5 GB	29.6 GB
	IMX 50	50 Mbps	4:2:0	375 MB	1.8 GB	8.3 GB	37.5 GB
	Uncompressed SD	176 Mbps (8 bit)	4:2:2	1.3 GB	6.6 GB	29 GB	132 GB
HDV	720P	19 Mbps	4:2:0	143 MB	715 MB	3.1 GB	14.3 GB
	1080i	25 Mbps	4:2:0	188 MB	940 MB	4.1 GB	18.8 GB
HD	Uncompressed HD	1.1 Gbps (10 bit)	4:2:2	8.8 GB	44 GB	195 GB	889 GB
	DVCPRO HD	100 Mbps	4:2:2	733 MB	3.67 GB	16.1 GB	73.3 GB
	HDCAM	135 Mbps	3:1:1	1.5 GB	7.5 GB	33 GB	150 GB
	Avid DNxHD™ 720p/24	58 Mbps	4:2:2	42 MB	210 MB	920 MB	4.2 GB
	Avid DNxHD 1080p/24	116 Mbps	4:2:2	850 MB	4.2 GB	18.7 GB	85 GB
	Avid DNxHD 1080p/25	185 Mbps	4:2:2	1.35 GB	6.75 GB	29.7 GB	135 GB
	Avid DNxHD 1080i/60	145 Mbps	4:2:2	1.1 GB	5.3 GB	23.4 GB	106 GB

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