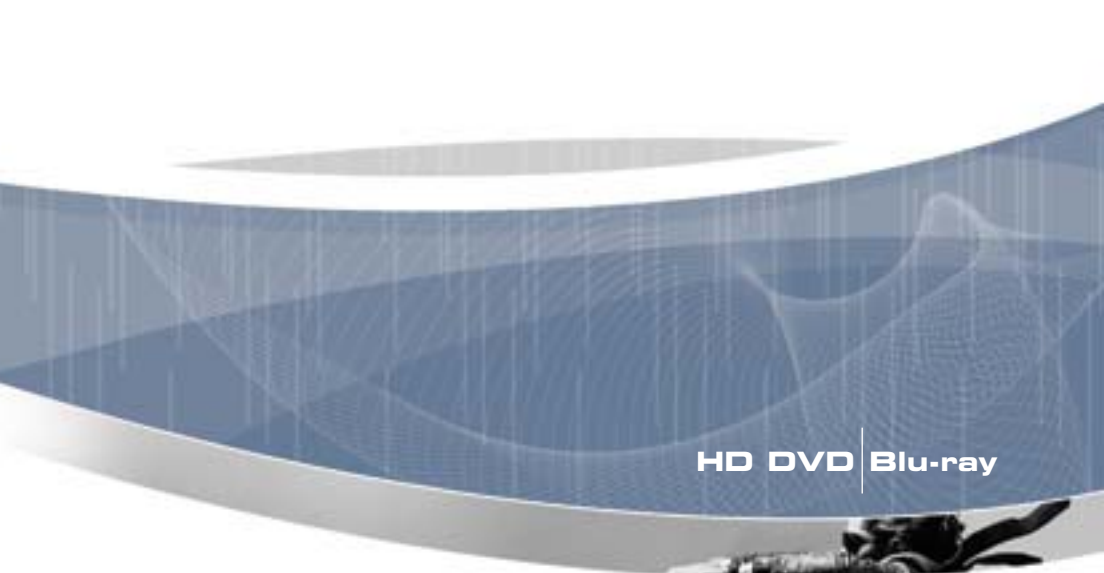

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CORPORATE
TECHNOLOGY

Maxell Corporate Technology

Providing a direct link between our research labs and end users, the Maxell Corporate Technology Group stands at the forefront of the blank media revolution. Here, the latest innovations are translated into practical applications, meeting and exceeding the needs of loyal Maxell users around the world.

The Next Generation of Disc Technology

High-definition video and increasingly large data documents are surpassing the capabilities of current blank media formats. Maxell Blu-ray and Maxell HD DVD technologies are poised to meet those expanding needs. Providing higher capacities and faster transfer rates than standard DVD, these new formats will soon become the new standard.

HD DVD

Maxell HD DVD and Blu-ray recordable media are discs that offer the speed and capacity to record high definition digital content. With capacities ranging from 3 to 5 times the capacity of DVD, transfer rates of 3 times that of DVD, and superior piracy protection schemes, both HD DVD and Blu-ray media are ideally suited for recording HDTV content.

Blu-ray

HD DVD

Recordable (Write-Once) / Re-recordable
15GB Single-Layer / **30GB** Dual-Layer Discs

Maxell HD DVDs are ideal for high-definition (HD) video recording and massive data archive solutions.

Maxell HD DVDs have been developed to meet recently expanding high-resolution digital HD TV and video storage requirements. Maxell HD DVDs are next-generation storage media, utilizing a blue-violet laser to allow the recording of high-volume data using a similar disc structure to that of conventional DVDs.

HD DVD-R
Single layer
15GB

HD DVD-R
Dual layer
30GB

HD DVD-RW
Single layer
15GB

HD DVD-RW
Dual layer
30GB

Blu-ray

Recordable (Write-Once) / Re-writable
25GB Single-Layer / **50GB** Dual-Layer Discs

Maxell Blu-ray Discs are ideal for recording high-definition (HD) video and large data archives.

Maxell Blu-ray Discs have been especially designed to meet currently expanding digital HD TV and video requirements, making it possible to record massive amounts of data. Unlike the red laser utilized in conventional DVDs, Blu-ray Discs use a blue-violet laser.

BD-R
Single layer
25GB

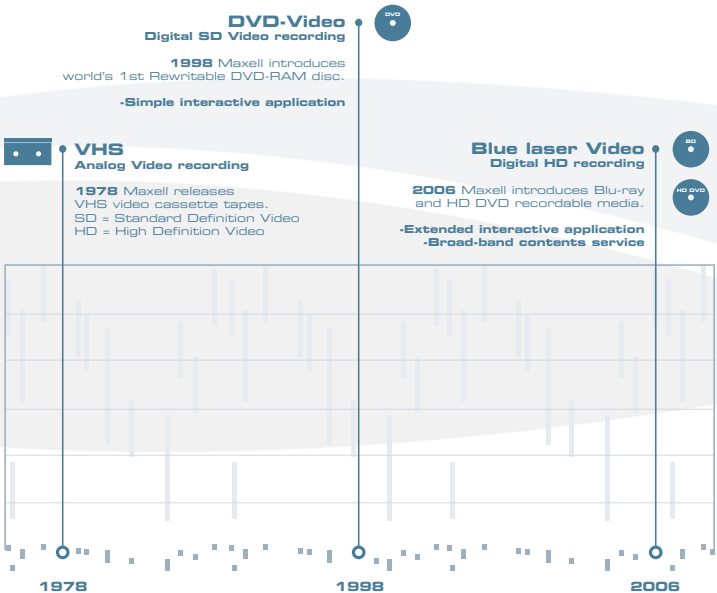
BD-R
Dual layer
50GB

BD-RE
Single layer
25GB

BD-RE
Dual layer
50GB

The Evolution of Maxell Recordable Media

Evolution of the packaged media for movie application.



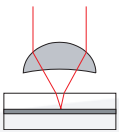
DVD/HD DVD/Blu-ray Disc Format Comparison Chart

Parameters	DVD	HD DVD	Blu-ray Disc
Capacity per layer (GB)	4.7	15	25
Number of sides	1 or 2	1 or 2	1
Laser wavelength (NM)	650	405	405
Cartridge	No	Optional	Optional
Hard coating needed	No	No	Yes
Complexity to read DVD	-	None	More Complex
Data transfer rate	11.08Mbps	36Mbps	36Mbps
Video Compression	MPEG-2	MPEG-2,MPEG-4 AVC, SMPTE VC-1	MPEG-2,MPEG-4 AVC, SMPTE VC-1
Maximum Recording Time (HDTV)*			
Single -Layer	-	1 hr. 40 min.	2 hrs. 48 min.
Dual-Layer	-	3 hrs. 20 min.	5 hrs. 36 min.

*All record times based on 19.4Mb/s United States ATSC Broadcast Rate and MPEG-2 encoding.

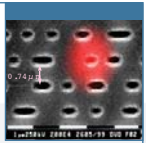
From Red to Blu

DVD

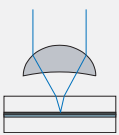


4.7GB

0.6 mm substrate

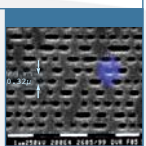


HD DVD

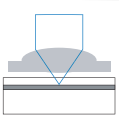


15GB

0.6 mm substrate



Blu-ray



25GB

0.1 mm cover layer

Physical Disc Structures

DVD and HD DVD have identical disc structures. Each of these formats is comprised of two "half" discs (0.6 mm thick) bonded together, with the information layer sandwiched in between the two. This similarity in disc structure makes possible easier (and lower cost) conversion of existing DVD manufacturing equipment from producing DVDs to producing HD DVD media. Blu-ray, on the other hand, has its information layer just beneath the surface of the disc, under a 0.1 mm cover layer. This unique disc structure results in the need for a hard coat layer as added protection for the recorded information, making the disc extremely durable and highly resistant to scratches and fingerprints.

Higher Capacities

HD DVD and Blu-ray each employ the use of a blue-violet laser, which can be focused down to a smaller "spot" size than DVD's red laser, resulting in smaller bits of information being burned into the discs' recording layers. These smaller spot sizes allow the recorded information to be packed much tighter and closer together, enabling both of these formats to have anywhere from 3 to 5 times the storage capacity of a standard DVD on exactly the same size disc.

Revolution vs Evolution

Hi-Def Capabilities Blu-ray	Hi-Def Capabilities HD DVD
Capacity - 25GB	Capacity - 15GB
Blu-ray Disc Association (BDA) Support	DVD Forum Support
Sony Playstation 3 Support - 1080p	Microsoft Xbox Support & external drive - 1080i
Initial Player Cost - $1,000 - $1,800	Initial Player Cost - $499 - $799
H/W Support - Sony, Panasonic, Philips, Pioneer, LG, Sanyo, HP, Samsung	H/W Support - Toshiba, NEC, Intel, HP, LG, Sanyo, Samsung
O/S Support - Microsoft Vista	O/S Support - Microsoft Vista
3 Forms of Counterfeit Protection AACS (Advanced Access Content System) +two others, BD+ and ROM Mark	1 Form of Counterfeit Protection - AACS
Higher Initial Manufacturing Costs -New Manufacturing Lines -Hard Coat Required	Lower Cost Conversion -Existing DVD Manufacturing used for production

HD DVD specifications

Disc type	HD DVD-ROM (Read-Only)	HD DVD-R (Recordable Once)	HD DVD-RW (Re-Recordable)
Capacity / Playback time / Recording time			
Single-sided, single layer	15GB	15GB	15GB
Single-sided, dual layer	30GB	30GB	30GB
Single-sided, triple layer	45GB	-	-
Double-sided, single layer	30GB	30GB	30GB
Double-sided, dual layer	60GB	60GB	60GB
Double-sided, triple layer	90GB	-	-
Video compression	MPEG-2, MPEG-4 AVC, SMPTE VC-1		

Blu-ray Disc specifications

Disc type	BD-ROM (Read-Only)	BD-R (Recordable Once)	BD-RE (Re-Writable)
Capacity / Playback time / Recording time			
Single-sided, single layer	25GB	25GB	25GB
Single-sided, dual layer	50GB	50GB	50GB
Single-sided, quadruple layer	100GB	100GB	100GB
Single-sided, octuple-layer	200GB	200GB	200GB
Video compression	MPEG-2, MPEG-4 AVC, SMPTE VC-1		

Notes

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For more information, visit our website at **www.maxell.com**.
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