



Blu-ray Disc | Frequently Asked Questions

maxell
CORPORATE
TECHNOLOGY

Blu-ray Disc FAQs

Q. What is Blu-ray Disc?

- A.** Blu-ray, also known as Blu-ray Disc (BD), is the name of one of two major formats competing for the emerging high definition DVD market. The format was developed to enable recording, rewriting, and playback of high-definition video (HD), as well as storing large amounts of data. The format offers more than five times the storage capacity of traditional DVDs and can hold up to 25GB on a single-layer disc and 50GB on a dual-layer disc.

Q. What does Blu-ray Disc stand for?

- A.** The name Blu-ray is derived from the underlying technology, which utilizes a blue-violet laser to read and write data. The name is a combination of "Blue" (blue-violet laser) and "Ray" (optical ray).

Blu-ray Disc FAQs

Q. Who developed Blu-ray Disc?

- A.** The Blu-ray Disc format was developed by the Blu-ray Disc Association (BDA), a group of leading consumer electronics, personal computer and media manufacturers, with more than 170 member companies from all over the world. Some of the major backers are:

Hollywood Studios	IT Companies	Consumer Electronics	Media Companies
Columbia Pictures	Apple	Hitachi	Maxell
Hollywood Pictures	Dell	LG	Fujifilm
Lion's Gate Entertainment	HP	JVC	Memorex
MGM		Matsushita	Optodisc
Paramount		Mitsubishi	Philips
Screen Gem Pictures		Panasonic	Ricoh
Sony Pictures		Pioneer	Ritek
Touchtone Pictures		Philips	Sony
Tristar Pictures		Samsung	TDK
Twentieth Century Fox		Sharp	Verbatim
Universal Music Group		Sony	
Walt Disney Pictures		Thomson	
Warner Bros. Entertainment			

Q. How big is a Blu-ray Disc and what does it look like?

- A.** A standard Blu-ray Disc is 12cm in diameter, the same size and similar appearance as current DVDs and CDs.

Q. What are the different Blu-ray Disc formats?

- A.** As with conventional CDs and DVDs, Blu-ray Discs may be available in a wide range of formats including ROM/R/RW. The following formats are part of the Blu-ray Disc specification:

- **BD-ROM** - read-only format for HD movies, music, software, games, etc.
- **BD-R** - recordable write once format for video recording and PC data storage.
- **BD-RE** - rewritable format for video recording and PC data storage.

There are also plans for a BD/DVD hybrid format, which combines Blu-ray Disc and DVD on the same disc to enable playback in both Blu-ray Disc players and DVD players.

Blu-ray Disc FAQs

Q. How much data can a Blu-ray Disc hold?

- A.** A single-layer disc can hold 25GB. A dual-layer disc can hold 50GB. To ensure that the Blu-ray Disc format is easily extendable (future-proof) it also includes support for multi-layer discs, which should allow the storage capacity to be increased to 100GB-200GB (25GB per layer) by adding more layers to the discs.

Q. How much video can you fit on a Blu-ray Disc?

- A.** It depends on the video code employed and whether the disc is single or dual layer:

High Definition (HD):

When recording with MPEG2 compression, a 25GB disc is able to record approximately 2 hours 48 min. or 5 hours 36 min. of High Definition (HD) video on a 50GB disc. * All record times based on 19.4Mbps United States ATSC Broadcast Rate and MPEG-2 encoding.

Blu-ray Disc FAQs

Q. Does Blu-ray Disc require a cartridge?

- A.** No. The development of new low cost hard-coating technologies has made the cartridge obsolete. Blu-ray Disc will instead rely on hard-coating for protection, which when applied will make the discs even more resistant to scratches and fingerprints than today's DVDs, while still preserving the same look and feel.

Q. Does Blu-ray Disc require an Internet connection?

- A.** No. You will not need an Internet connection for playback of Blu-ray Disc movies. The Internet connection will be used for value-added features such as downloading subtitles, movie trailers, web browsing, etc. It will also be required to authorize managed copies of Blu-ray Disc movies that can be transferred over a home network.

Q. How long will a Blu-ray Disc last?

- A.** It is expected to last 30 years or more when stored at room temperature. The optimum temperature is 68°F, and the optimum relative humidity is 40%.

Q. Will Blu-ray recorders be the next VCRs?

A. Probably. As VCRs can't record HDTV programming, consumers will soon need to replace them. Blu-ray Disc recorders combined with hard drives offer a very flexible alternative for those that want to record HDTV. While HD-DVRs already allow consumers to record HDTV, the amount of HDTV programming that can be recorded and archived is limited by the size of the hard drive. Blu-ray Disc recorders will offer a solution to this problem as they allow consumers to record the video to Blu-ray Discs to free up space on the hard drive. This should make them popular among people that want to archive a lot of their HDTV recordings. The Blu-ray Disc recorders will also offer many compelling new features not possible with a traditional VCR:

- Random access - instantly jump to any place on the disc
- Searching - quickly browse and preview recorded programs in real-time
- Create play lists - change the order of recorded programs and edit recorded video
- Simultaneous recording and playback of video (enables Time slip/Chasing playback)
- Automatically find an empty space to avoid recording over programs
- Improved picture - ability to record high-definition television (HDTV)
- Improved sound - ability to record surround sound (Dolby Digital, DTS, etc)

Blu-ray Disc FAQs

Q. What type of equipment is needed to play a Blu-ray Disc?

- A.** You will need a BD capable player. No existing DVD player will be able to read a Blu-ray Disc, and there is no software or hardware upgrade that can be performed to enable BD playback. Buying a new player is, therefore, the only choice if you want BD playback.

Q. What are the technical differences between DVD and Blu-ray Disc?

DVD/Blu-ray Disc Format Comparison Chart

Parameters	DVD	Blu-ray Disc
Capacity per layer (GB)	4.7	25
Number of layers	1 or 2	1 or 2
Number of sides	1 or 2	1
Substrate + cover layer (mm)	0.6 + 0.6	1.1 + 0.1
Laser wavelength (nm)	650	405
Numerical aperture	0.60	0.85
Cartridge	No	No
Hard coating needed	No	Yes
Complexity to read DVD	-	More complex
Data transfer rate	11.08Mbps	36Mbps
Video Compression	MPEG-2	MPEG-2, MPEG-4 AVC, SMPTE VC-1
*Recording Time (HDTV)	Single-Layer	-
	Dual-Layer	-
		2 hours 48 min.
		5 hours 36 min.

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

Q. What about my existing DVD collection?

- A.** There is no official standard that says DVDs will have to be supported by BD devices, but the general consensus is that all BD devices will support DVDs, without requiring any major modifications on the manufacturer's part. While it is not compulsory for manufacturers, the Blu-ray Disc Association recommends that Blu-ray Disc drives should be capable of reading DVDs, ensuring backward compatibility.

Q. Is Blu-ray Disc the same thing as HD DVD?

- A.** No. HD DVD, previously known as AOD (Advanced Optical Disc), is the name of a competing next-generation optical disc format developed by Toshiba and NEC. The format is quite different from Blu-ray Disc, but also relies on blue-laser technology to achieve a higher storage capacity. The format is being developed within the DVD Forum as a possible successor to the current DVD technology.

Q. What are the differences between Blu-ray Disc and HD DVD?

- A.** Each next-generation DVD format comes in single-layer and dual-layer formats. For Blu-ray Disc, it is 25GB and 50GB; for HD DVD, that means capacities of 15GB and 30GB.

Blu-ray Disc FAQs

Q. How should a Blu-ray Disc be cared for?

- A.** Blu-ray Discs should be treated basically the same way a DVD or CD is treated. Keep your discs and the inside of your player free from dust and debris. Be especially careful not to scratch or put fingerprint marks on the recording surface of the disc, and keep them away from extreme temperatures and humidity.

Q. What are the technical differences between Blu-ray Disc and HD DVD?

Blu-ray Disc/HD DVD Format Comparison Chart

Parameters	Blu-ray Disc	HD DVD
Capacity per layer (GB)	25	15
Number of layers	1 or 2	1 or 2
Number of sides	1	1 or 2
Substrate + cover layer (mm)	1.1 + 0.1	0.6 + 0.6
Laser wavelength (nm)	405	405
Numerical aperture	0.85	0.65
Cartridge	No	No
Tilt control needed	No	Yes
Hard coating needed	Yes	No
Complexity to read DVD	More complex	None
Data transfer rate	36Mbps	36Mbps
Video Compression	MPEG-2, MPEG-4 AVC, SMPTE VC-1	MPEG-2, MPEG-4 AVC, SMPTE VC-1
*Recording Time (HDTV)	Single-Layer	2 hours 48 min.
	Dual-Layer	5 hours 36 min.
		1 hour 40 min.
		3 hours 20 min.

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



For more information, visit our website at www.maxell.com.
For technical support call **1-800-377-5887**.

Maxell Corporation of America 22-08 Route 208, Fair Lawn, New Jersey 07410
Maxell Canada 50 Locke St. Unit #2, Concord, Ontario, Canada L4K5R4
Maxell Latin America Plaza Btresh, Calle 50, Panama City, Panama

© 2006 Maxell Corporation of America