

# LaCie d2 Blu-ray Drive

## White Paper

### HOW CAN 50GB BE STORED ON ONE DISC?

The structure of a Blu-ray (BD) disc fundamentally differs from the structure of a DVD/CD. Because the data layer on a Blu-ray disc is placed much “closer” to the laser lens than on a DVD/CD, the laser beam provides more precision. (fig. A)

Also, because the disc’s first data layer is positioned at the very top of the disc structure, there is more space left underneath it for an additional layer, allowing for storage on 2 layers (50GB).

### HOW CAN THE LACIE d2 BLU-RAY DRIVE READ AND WRITE TO BD/DVD/CD?

The optical parameters of BD, DVD and CD are different (see previous paragraph). Therefore, the LaCie d2 Blu-ray Drive combines:

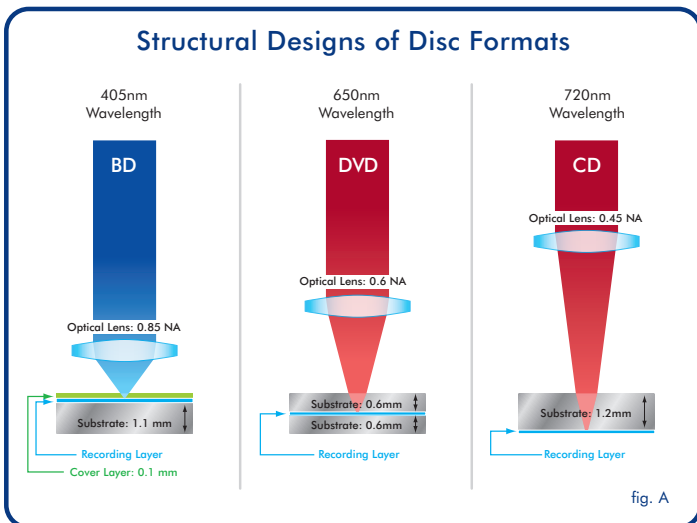
- 3 Laser Diodes: one for each disc format
- 2 Lenses: one to write/read BD, one to write/read DVD/CD

### WHY ARE BLU-RAY DISCS A SAFE, LONG-TERM ARCHIVING SOLUTION?

The recording layer of a Blu-ray disc is located just under the cover layer, which is only 0.1 mm thick.

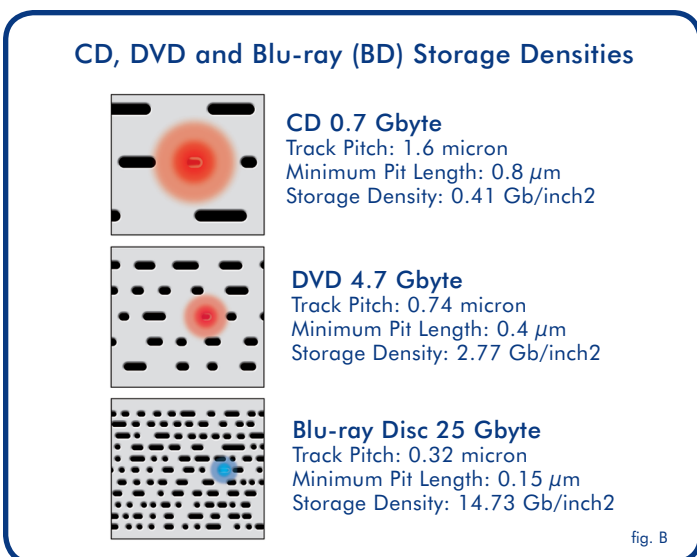
To protect it and thus ensure long-term Blu-ray disc content reliability, several technologies have been developed by media manufacturers:

- **Stable Writing & High Protection:** The cover layer is applied precisely and smoothly to the disc, not to deflect the sensitive laser beam when reading or writing. It also ensures evenness in recording layer protection.
- **Scratch-Free Protective Layer:** Blu-ray standards stipulate one scratch-free top layer that is dirt and dust repellent and prevents fingerprint smudges from interfering with the disc’s readability.
- **New Light-Resistant Recording Layer:** Made up of an inorganic material that is different from DVD/CDs, which use pigments, BD’s recording layer is less sensitive to ultraviolet light.
- **Overwriting Reliability:** Changed material in the recording layer allows rewriting on a BD-RE up to 10,000 times with stable quality.



The LaCie d2 Blu-ray Drive uses a blue-violet laser and improved lens specifications (wavelength, NA-numerical aperture) allowing for a laser beam focus that’s approximately one-fifth smaller than the red laser used to burn DVDs.

This combination enables recording much smaller and higher density pits onto BD discs. (fig. B)



## WHICH HD VIDEO COMPRESSION STANDARDS DOES BLU-RAY COMPLY WITH?

HD video is a data-hungry application. MPEG-2 codec allows storing a full-length feature film in HD, plus bonus material on just one 25GB disc. MPEG-4 AVC (H.264) and VC1 are two other video compression standards that can match the best possible MPEG-2 quality at up to half the data rate.

Since the LaCie d2 Blu-ray Drive complies with each of these, the user can choose the most suitable one for a particular application.

### Typical HD Video Transfer Rates:

MPEG-2 = 21 Mbits/s

MPEG-4 AVC (H.264) = 8 Mbits/s

VC1 = 8Mbits/s



LaCie is a global leader in manufacturing top-of-the-line solutions that are often first-to-market, constantly raising the bar and re-establishing industry standards.

Through a combination of cutting-edge engineering and a rich 16-year history of unique design aesthetics, LaCie has earned an excellent reputation for producing solutions that are the perfect synthesis of form and function. Our hard drives, media drives, displays, and accessories are created to enhance and expand your computing environment, no matter its platform or configuration.

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