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DVD White Paper

DVD-R Authoring vs. General Media: What's the Difference?

Key Points of This Paper:

- There are two types of DVD-R media:
 1. DVD-R for Authoring (635 nm wavelength recording sensitivity)
 2. DVD-R for General (650 nm wavelength recording sensitivity)
- Each type of DVD-R disc must be recorded on the proper drive (see chart below).
- Both types of DVD-R media can be played equally well on any DVD video player or DVD-ROM drive that supports DVD-R playback. Playback devices do not care which type of DVD-R media was used for recording.
- DVD-R for Authoring media can be recorded only on the Pioneer DVR-S201 and DVR-S101 (3.95 GB only).
- DVD-R for General media can be recorded only on the Pioneer DVR-A03 and DVR-103 (OEM) drives, as well as the DVR-2000 set top video recorder.
- Either type of DVD-R disc can contain any type of information, including authored DVD video titles.
- CSS encrypted video programs cannot be stored on either type of DVD-R media.

Pioneer DVD-R Recorder	DVD-R Media Supported	Capacity
DVR-S101	Authoring	3.95 GB only
DVR-S201	Authoring	3.95 and 4.7 GB
DVR-A03, DVR-103 (OEM)	General	4.7 GB only
DVR-2000 (set top video recorder)	General	4.7 GB only

Introduction

There are now two different types of DVD Recordable (DVD-R) media: DVD-R for Authoring and DVD-R for General. It is important to understand how these two formats differ, and just as importantly, how they are alike. In a nutshell, it's important to match the correct type of DVD-R media with specific DVD-R recorders, but after recording, either type can be used for playback on any playback device that supports DVD-R.

Background

DVD-R is an official member of the DVD Forum's family of formats. Its write-once characteristic allows users to make their own DVD discs, very similar to how CD-Rs are recorded. As with CD-R, playback compatibility is one of DVD-R's most important attributes – nearly all existing DVD video players and DVD-ROM drives will play one or both of the two available disc capacities (3.95 or 4.7 billion bytes). Another key feature is the security inherent in DVD-R's write-once nature – no one can accidentally erase valuable information once it's been recorded. And because at least one media manufacturer (Pioneer) specifies a 100-year life expectancy of recorded DVD-R discs, the format is well suited for long term archival applications.

Until early 2001, DVD-R was used primarily in professional applications such as video authoring and storage of imaging data. For DVD authoring users, DVD-R allows testing and approval of finished titles prior to mass production, and can even be used by some replicators as the final program source in place of DLT tape. In many cases, recorded DVD-R discs are the finished product when only a few discs are needed for deployment in vertical applications such as museums or videowalls in retail stores. In medical environments, x-rays, CT-scans and ultrasound video images are stored in automated DVD-R library systems to provide physicians much faster access to information as well as better reliability than tape solutions. In the banking industry, the format is used for storage and retrieval of checks and credit card receipt images generated each day in retail transactions.

During this initial three year period, the underlying technology of these professional applications employed 635 nanometer (nm) lasers for writing information to 3.95 and 4.7 GB DVD-R discs. This technology has allowed DVD-R products to become vital and dependable components of many DVD authoring suites and library systems around the world.

Two Formats for Two Markets: Professional and Consumer

To support consumer applications for DVD-R, the DVD Forum determined that another type of DVD-R media was necessary. The newest member of the DVD-R family uses a recording wavelength of 650nm, and discs are recorded on different drives than the existing 635nm format. This new format is called "DVD-R for General", because it is aimed at a broad base of applications. Meanwhile, the existing 635nm format has been renamed "DVD-R for Authoring" to reflect its use in professional applications.

Why are there two formats? The key reason for the introduction of DVD-R for General media is that it contains content protection measures that make it physically impossible to make bit-for-bit copies of CSS encrypted entertainment titles.

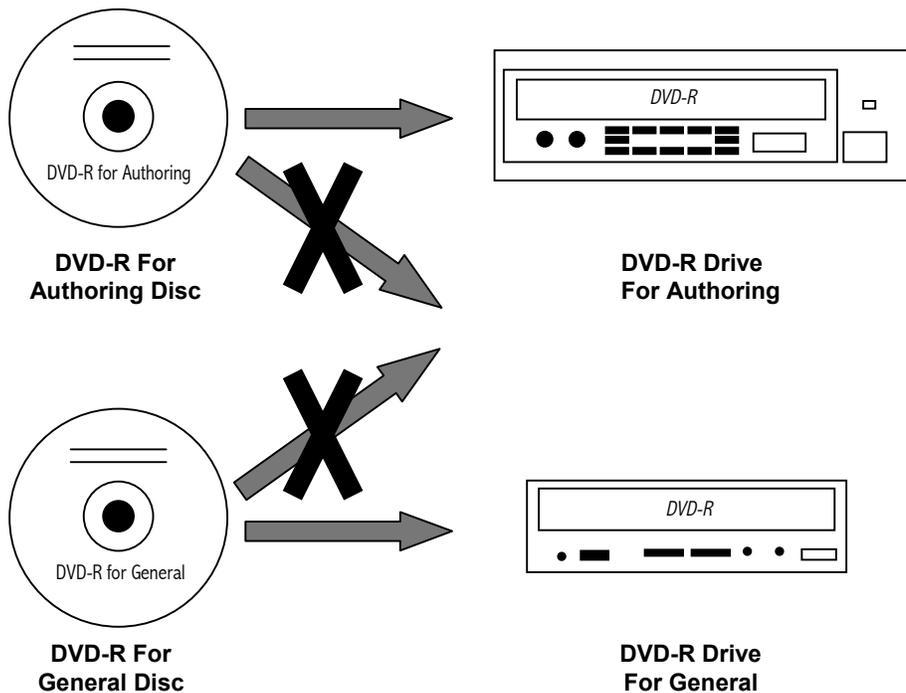
Meanwhile, the 4.7 GB Authoring media specification has introduced a new and unique feature that is potentially quite valuable to professional users: the Cutting Master Format (CMF). CMF allows 4.7 GB Authoring media to be used as a direct replacement for DLT master tapes when submitting a title for replication, thus saving valuable time in the

final authoring stage. This is accomplished by using a portion of the DVD-R disc's lead-in area to store the DDP (Disc Description Protocol) header information normally used on DLT master tapes. The CMF capability is one reason why Pioneer anticipates that Authoring drives and media will continue to be utilized in the professional DVD environment; General media does not accommodate this feature.

Either type of DVD-R media can be used for DVD video authoring, which is the process of preparing video content for use in DVD video players. It should be noted, however, that CSS encryption cannot be used with either type of DVD-R media.

Recording Compatibility

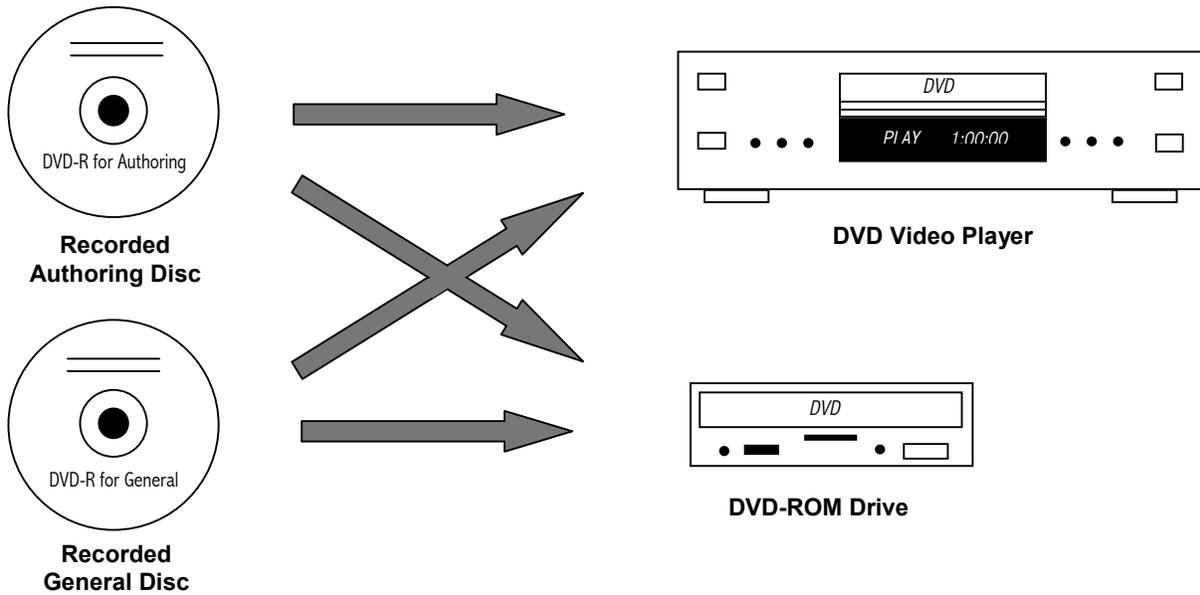
The two types of DVD-R media use different recording laser wavelengths, which means that the proper type of media must be recorded in the corresponding type of DVD-R drive. Authoring media must be recorded in either a DVR-S101 (3.95 GB only) drive or a DVR-S201 (both capacities) drive, and General media must be recorded in a General drive such as the DVR-A03 or DVR-2000 video set top recorder. Pioneer expects that future drives, including those from other manufacturers, will most likely be General type drives.



Authoring vs. General DVD-R Recording Compatibility

Playback Compatibility

For playback, there is no compatibility consideration. Both Authoring and General DVD-R media can be played back equally well in any DVD video player or DVD-ROM drive that supports DVD-R (most existing models).



Authoring vs. General DVD-R Playback Compatibility