User Guide

Nero Burning ROM 7

Nero AG

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REV 7.0

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1.1 Five easy steps to a finished CD/DVD

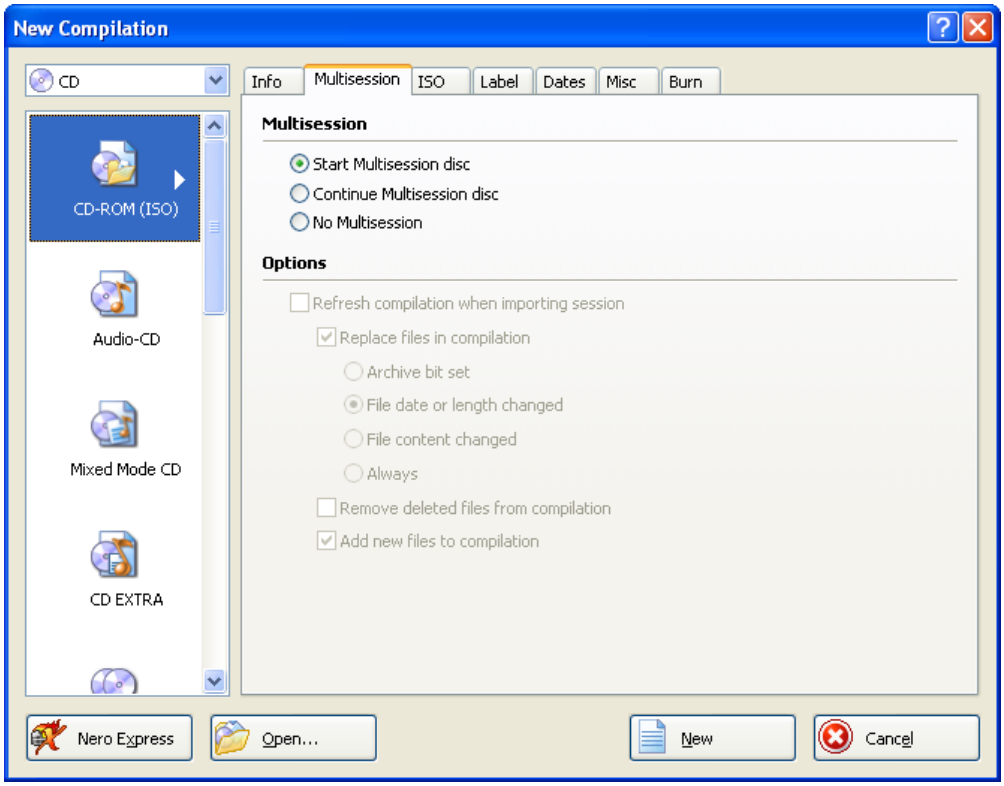
With **Nero Burning ROM 7** you can quickly and easily create your own discs and copy (non-copy-protected) discs.

With **Nero Burning ROM 7,** you have a powerful burning software which enables you to easily burn data, music and videos onto discs. **Nero Burning ROM 7** is the ideal software for power users - making it possible to work individually to a large extent. You have full control over the projects you want to burn and you can specify the file system, the length of the file names and the required font. You want to change the name of the disc? No problem, **Nero Burning ROM 7** will assist you and provide you with several options. Even if you want to burn projects with unusual formats, **Nero Burning ROM 7** assists you and enables you to create discs which can be read by both Apple and Windows computers. UDF format discs are also no problem. You can customize the tool bar and change the shortcuts of **Nero Burning ROM 7** - in other words, you have a program which is as individual as you are. Despite the scope and the vast ability of **Nero Burning ROM 7**, it remains an easy-to-use burning program which creates your own discs in just a few easy steps. First select the disc type (a type supported by your device) to be burned (CD / DVD / Blu-ray / HD DVD), then select the type of project before adding the required data, and then you are ready to start burning - quickly and reliably, in proven Nero quality.

Step 1: Launching the program

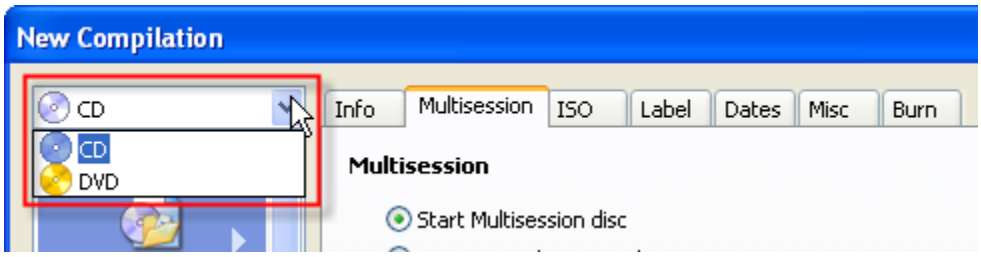
Start **Nero Burning ROM 7** using the command sequence 'Start' >'All programs' > 'Nero 7 Premium' > 'Audio' / 'Data' > 'Nero Burning ROM'.

The program starts with the window in which you select the media type and specify the compilation type.



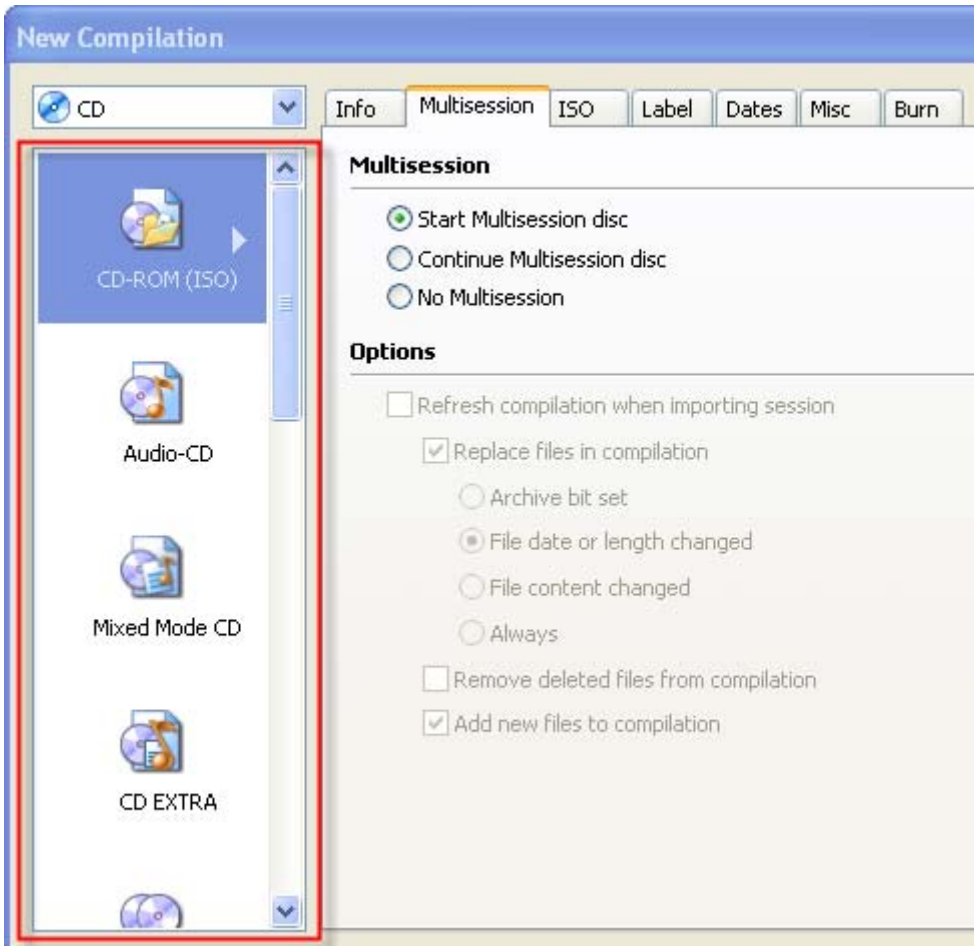
Step 2: Selecting the media type

If you have installed a recorder that can burn a number of media types (e.g. CDs, DVDs), then click on the drop-down list box and select the media type to be burned.

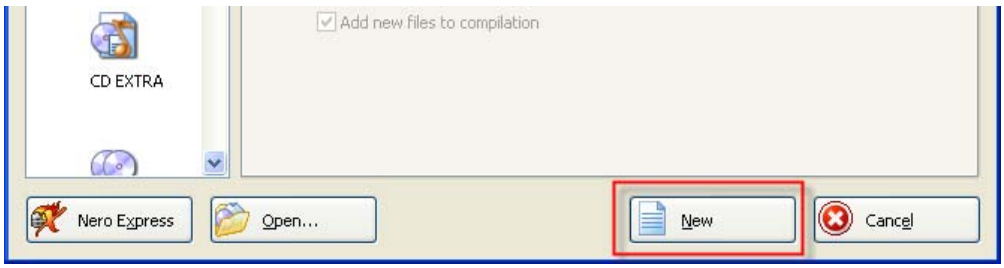


Step 3: Specifying the compilation type

Select the desired compilation type. The window in the compilation area will display the possible compilations for the media type selected. For example, to burn an Audio CD you must use the media type 'CD' and to burn a DVD-Video you must use the media type 'DVD'.

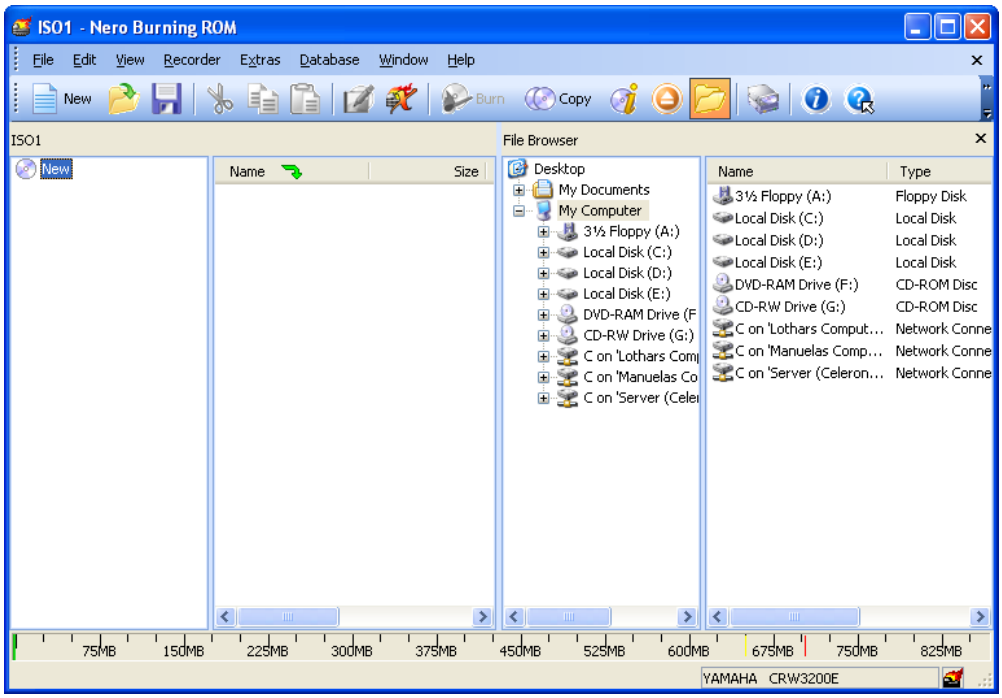


Click on the 'New' button to finish selection of the compilation.



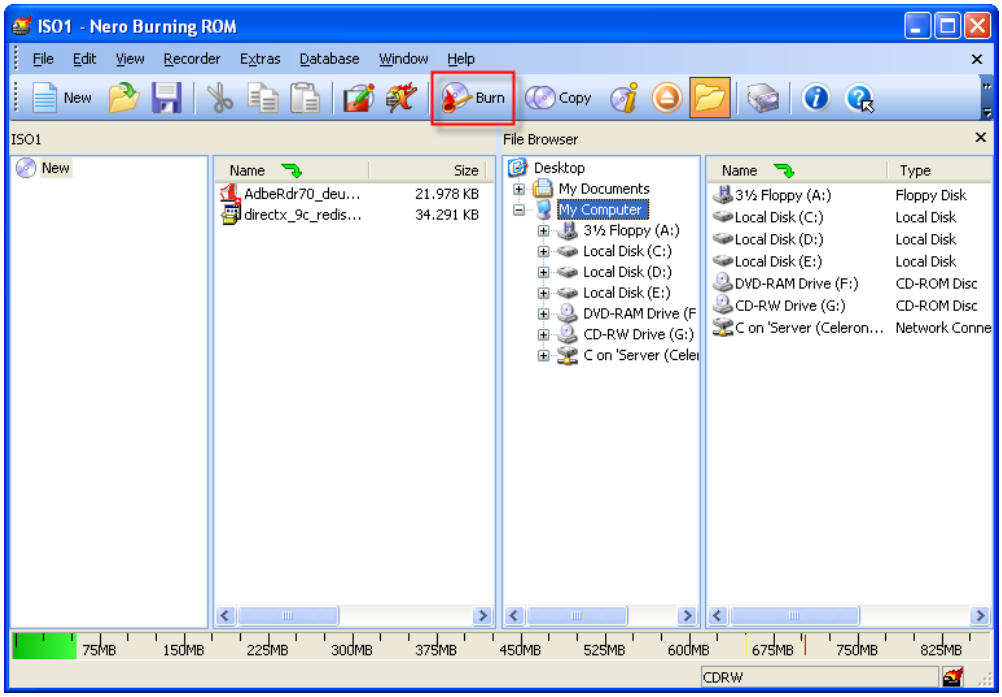
The **Nero Burning ROM 7** file browser opens in which you select the files to be burned.

Step 4: Running a compilation



Compiling the files is child's play: Select the desired files on the right-hand side of the file browser and drag them to the left-hand side. Repeat this step until all of the files are in the compilation area of the file browser. Click on the 

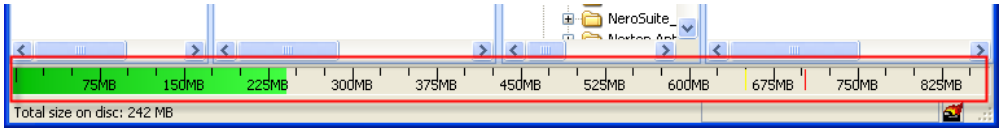
icon to switch to the burning area.



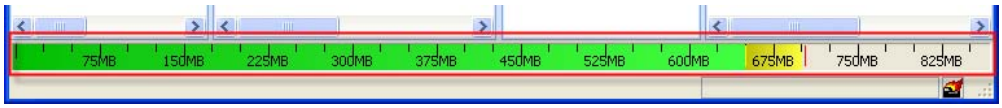
The **Nero Burning ROM 7** file browser is configured as standard to show the file structure of your PC on the right-hand side and the files to be burned on the left-hand side.

If there is no file browser open yet, you can repeat this step by clicking on the  icon.

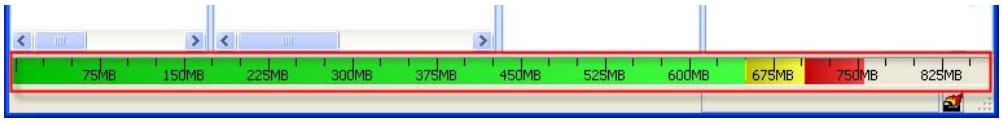
You can tell whether the data will fit on the disc or the disc will be too small by the color of the full-o-meter. If the color of the full-o-meter is green, the data will fit on the disc.



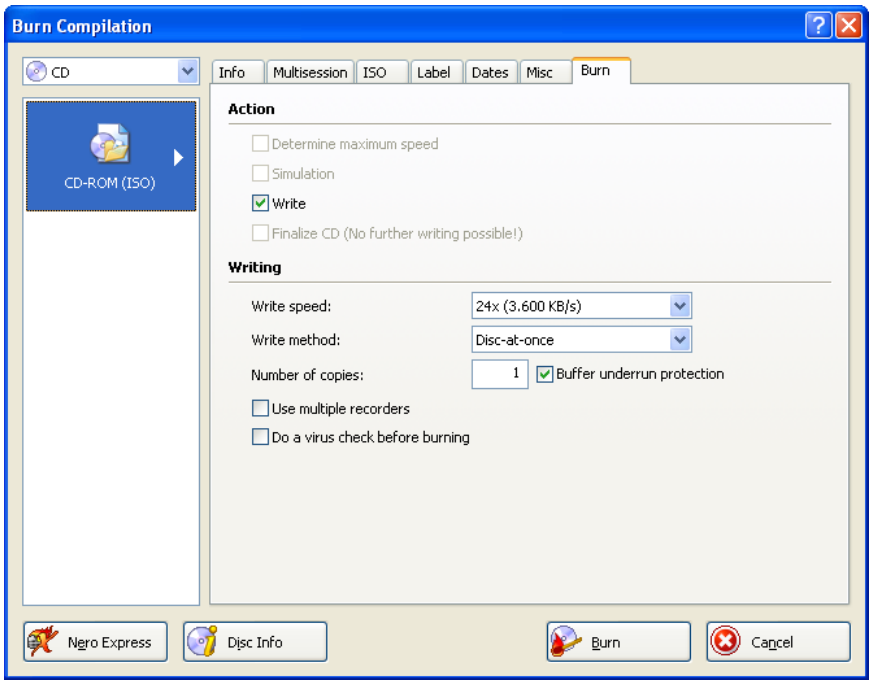
If the color is yellow, the data might fit on the disc. This depends on the disc inserted. Commercially available CDs, for example, are available with a capacity of 650 MB and 700 MB, i.e. in the example shown the data would fit on a CD with 700 MB, but not on a CD with 650 MB.



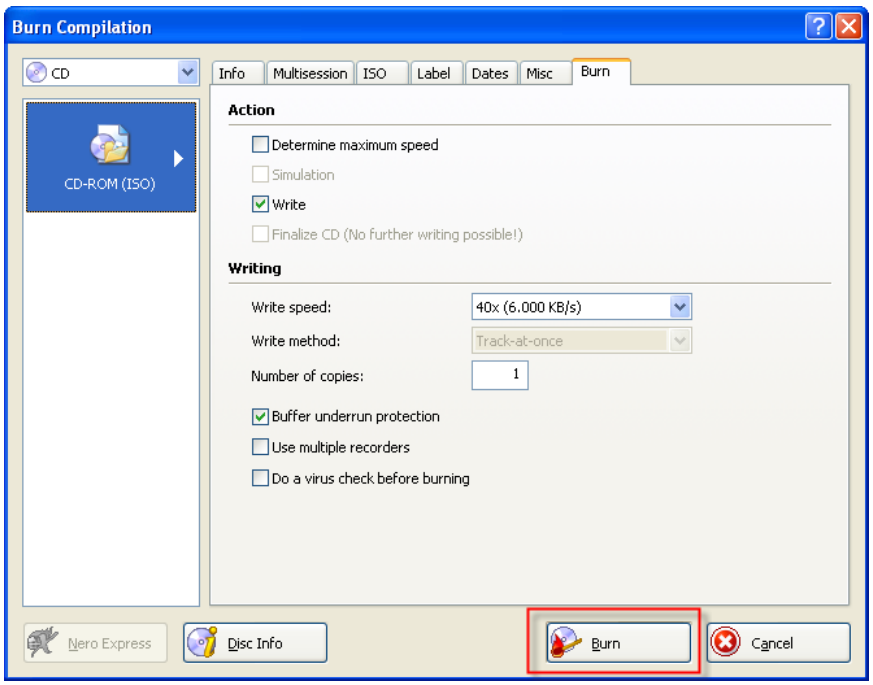
If the color is red, the data will not fit on the disc unless you have inserted a special size of disc, for example a CD with 800 MB.



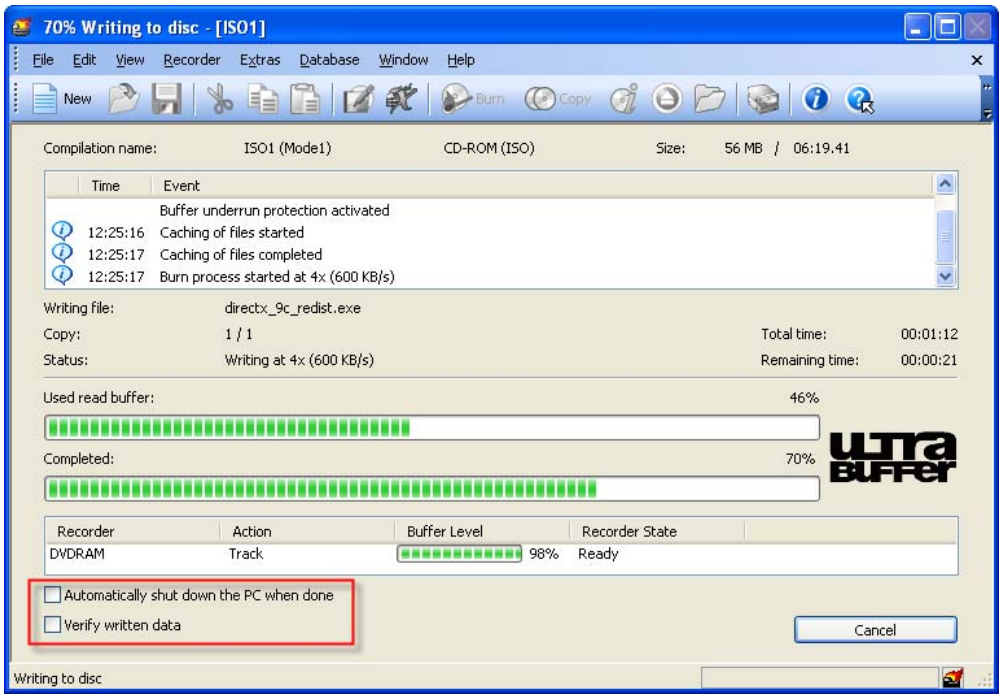
Step 5: Starting the burn process



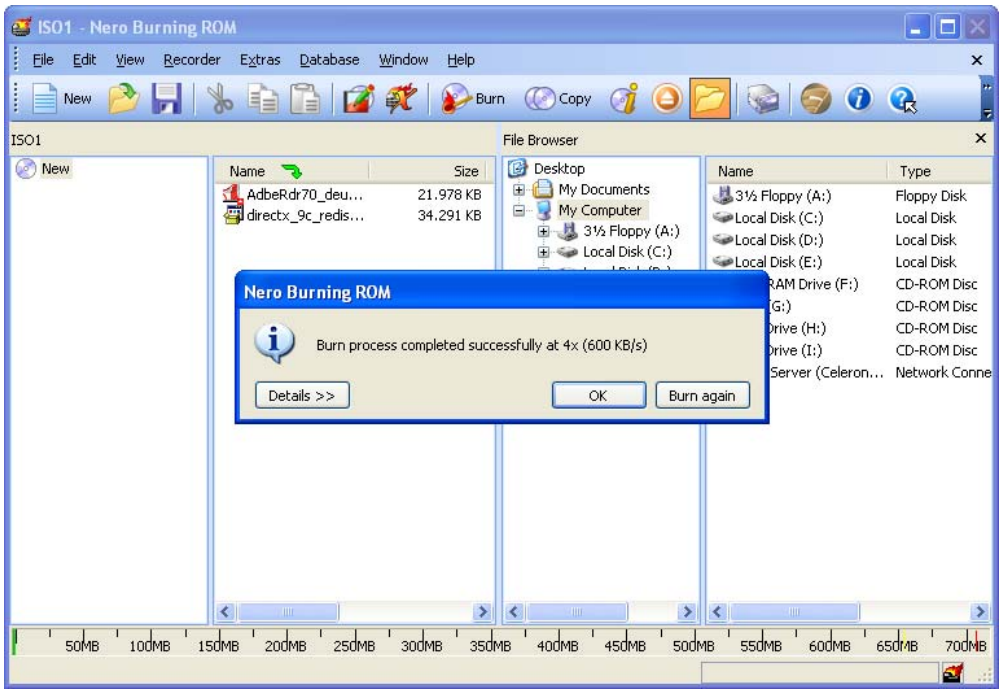
On the 'Burn' tab you can make the final settings before the burn process. Note, however, that all of the settings are preset as standard to the most suitable value. Insert the disc and click on the 'Burn' button.



The burn process is started; while it is running you can specify whether the files burned onto the disc should be verified and/or the PC shut down after the burn process (provided this is technically possible and you have the administrator rights required for this).



The outcome of the burn process is displayed once it is finished. Click on 'OK' to finish or on 'Burn again' if the compilation should be burned again.

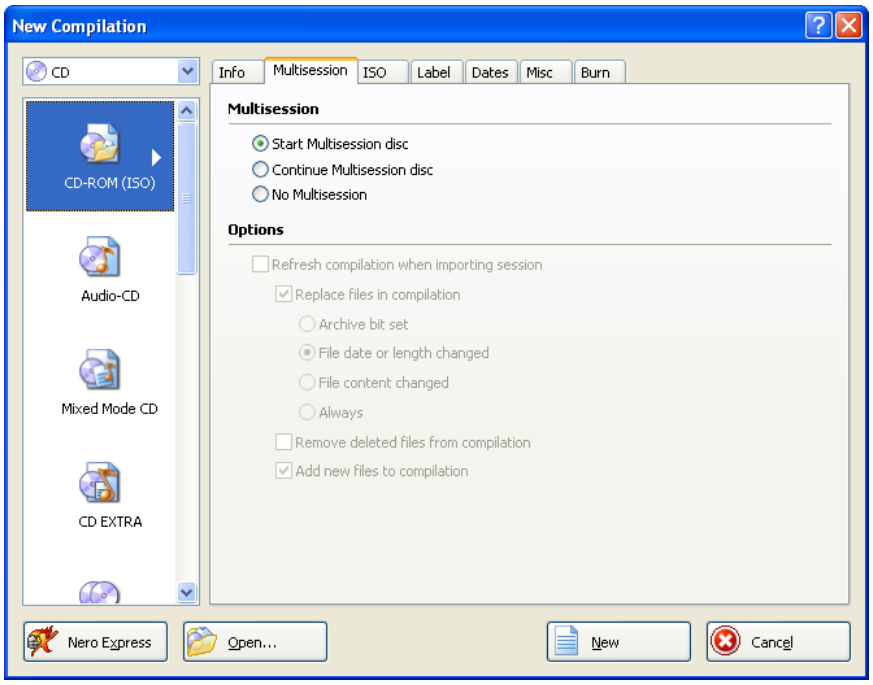


1.2 Copying a disc in four easy steps

Step 1: Launching the program

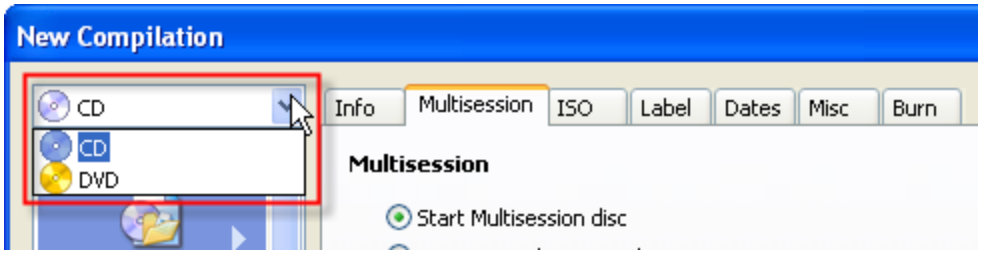
Start **Nero Burning ROM 7** using the command sequence 'Start' >'All programs' > 'Nero 7 Premium' > 'Audio' 'Data' > 'Nero Burning ROM'.

The program starts with the window in which you select the media type and specify the compilation type.



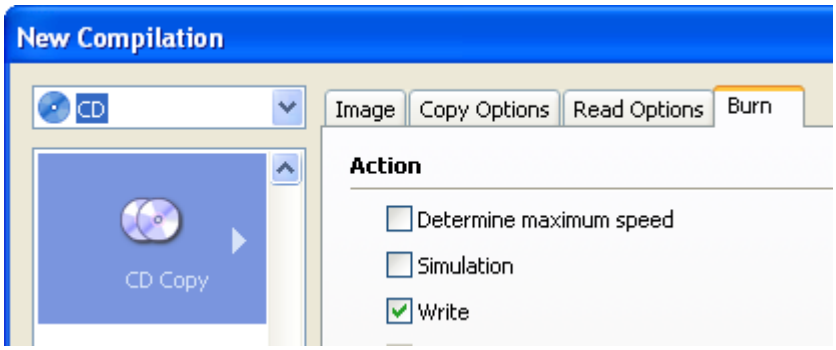
Step 2: Selecting the media type

If you have installed a recorder that can burn a number of media types (e.g. CDs, DVDs), then click on the drop-down list box and select the media type to be copied.

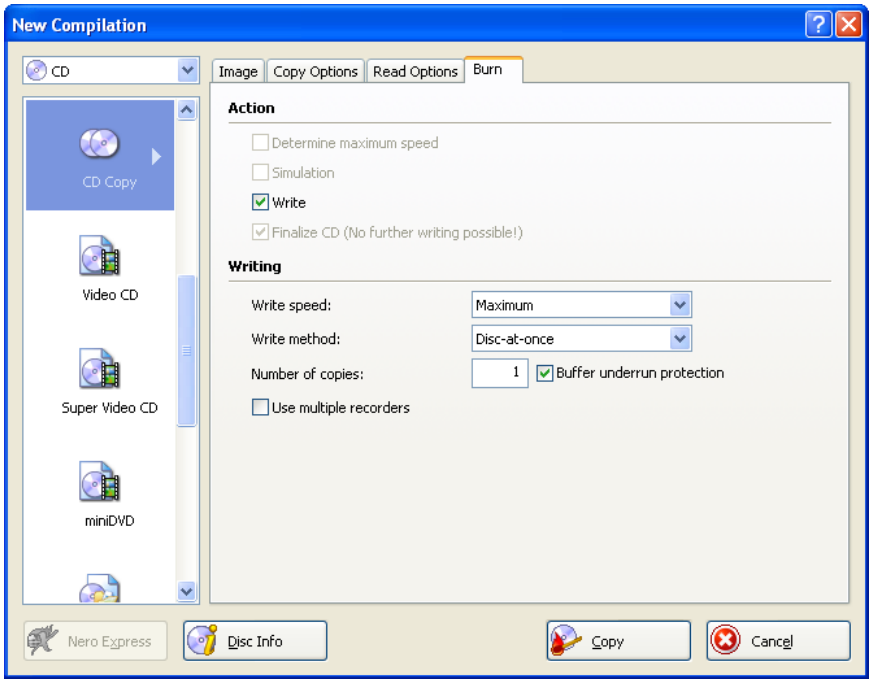


Step 3: Specifying the compilation type

Select the compilation type 'CD Copy' or 'DVD Copy' according to the media type selected.



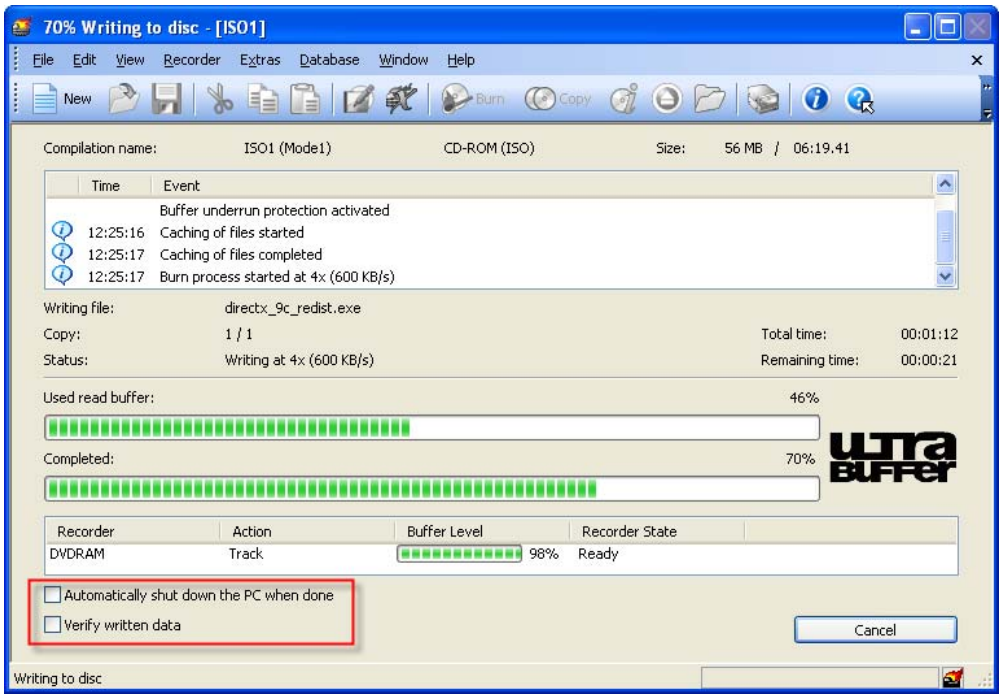
Step 4: Starting the burn process



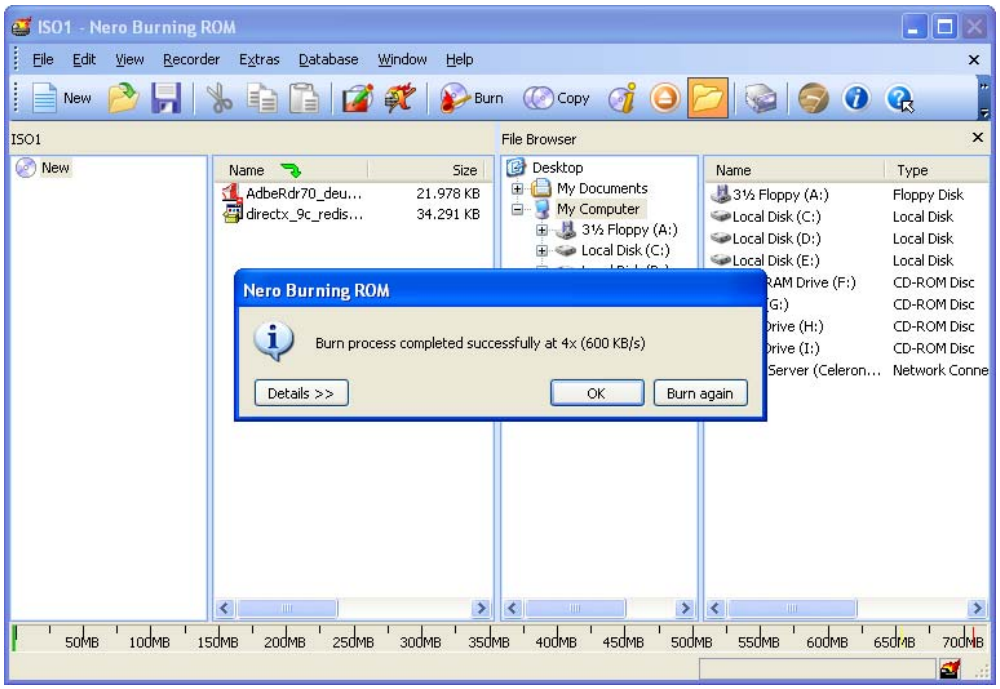
A: Direct copy (only for systems with two drives)
Insert the disc to be copied in the source drive and the empty disc in the target drive and close both trays. Click on the 'Burn' button to start the copy process.

B: Copy via image file (for systems with one drive)
Insert the disc to be copied in the drive and close the tray. Click on the 'Burn' button to start the copy process.

The burn process is started; while it is running you can specify whether the files burned onto the disc should be verified and/or the PC shut down after the burn process (provided this is technically possible and you have the administrator rights required for this).



The outcome of the burn process is displayed once it is finished. Click on 'OK' to finish or on 'Burn again' if the compilation should be burned again.



2 General information about Nero Burning ROM 7

2.1 Media supported by Nero

Nero Burning ROM 7 is able to burn different types of media. Both DVDs and CDs can be burned with a DVD recorder. Only CDs can be burned with a CD recorder.

The following table shows the possible compilations for the various media types.

CD	DVD
CD-ROM (ISO)	DVD-ROM (IS0)
Audio CD	DVD Copy
Mixed Mode CD	DVD-Video
CD EXTRA	DVD-ROM (Boot)
CD Copy	DVD-ROM (UDF)
Video CD	DVD-ROM (UDF/ISO)
Super Video CD	
miniDVD	
CD-ROM (Boot)	
CD-ROM (Hybrid)	
CD-ROM (UDF)	
CD-ROM (UDF/ISO)	

2.2 Nero Express 7

2.2.1 Differences to Nero Burning ROM 7

Nero Express 7 is an assistant-driven application based on **Nero Burning ROM 7**.

You can switch from **Nero Burning ROM 7** to **Nero Express 7** at any time during compilation of a project if the compilation in question is also to be burned using **Nero Express 7**.

If the  icon is activated, you can switch to **Nero Express 7**.

If the  icon is deactivated, you cannot switch to **Nero Express 7**.

Even though **Nero Burning ROM 7** can burn a greater number of compilations than **Nero Express 7**, there are also compilation templates that are found exclusively in **Nero Express 7**:

- MP3 CD and MP3 DVD
- WMA CD and WMA DVD
- Nero Digital Audio CD and Nero Digital Audio DVD

You can still burn these compilations using **Nero Burning ROM 7**. To do so, simply select Data CD or Data DVD as the compilation and add MP3, WMA or Nero digital audio files.

With **Nero Express 7** you can burn all of the compilations marked with an X in the following table.

	CD	**DVD**
Data disk	X	X
Audio CD	X	
MP3 disk	X	X
WMA disk	X	X
Nero Digital Audio	X	X
Video CD	X	
Super Video CD	X	
DVD-Video		X
Copying a disc	X	X
Image file	X	X
Saved compilation	X	X

You will find further information about using **Nero Express 7** in the manual written especially for **Nero Express 7**.

3 Creating a CD

3.1 Data CD

You can save all kinds of data on a data CD, i.e. these compilations can be used for all file types and every kind of original file can be burned.

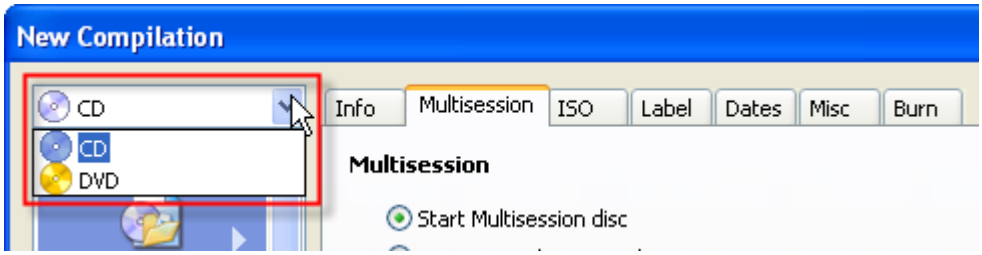
You can burn a data CD using the following compilations:

- CD-ROM (ISO)
- CD-ROM (UDF)
- CD-ROM (UDF/ISO)

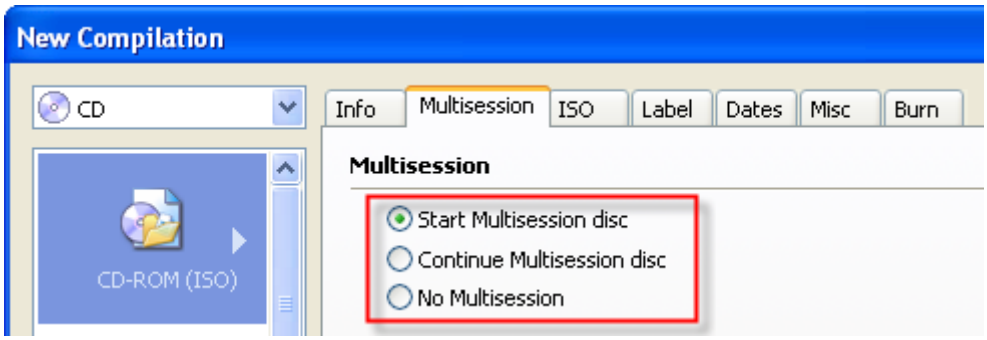
A special feature of data CDs is the option of creating a multisession CD. This means that the CD does not have to be written in one session (as with audio CDs and DVD videos, for example), instead it can be written in a number of sessions until it is full.

3.1.1 Creating a CD-ROM (ISO)

1. Start **Nero Burning ROM 7**.
2. If you have installed a recorder that can burn a number of media types (e.g. CDs, DVDs), then click on the drop-down list box and select the media type to be copied.



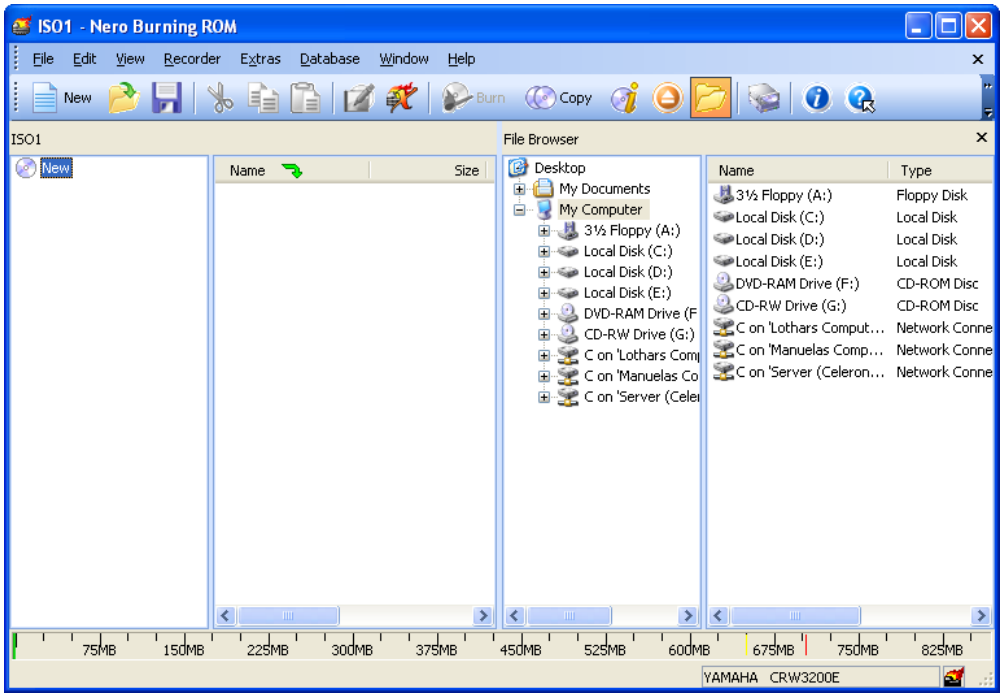
3. Select the 'CD-ROM (ISO)' compilation, thereby bringing the 'Multisession' tab to the foreground. Select the desired multisession option.
   Start Multisession disc: A multisession disc will be started, i.e. you create the first session and can burn further sessions later once the first session has been burned. All of the burned sessions are visible later in the drive and you can access all of the data.
   Continue Multisession disc: A further session will be burned onto a disc already burned with at least one session. All of the burned sessions are visible later in the drive and you can access all of the data. If you select this option, there must be a multisession disc in the recorder.
   No Multisession: A multisession disc will not be created. This option still enables the disc to be written until it is full. Note, however, that only the last session will be visible then and you will only have access to the data from this last session.



Additional information on the multisession options and the other tabs can be found in the chapter 'Background information for advanced users'.

4. Click on the 'New' button to finish selection of the compilation. The **Nero Burning ROM 7** file browser opens in which you select the files to be burned.

5. Select the desired files on the right-hand side of the file browser and drag them to the left-hand side. Repeat this step until all of the files are in the compilation area of the file browser.



6. Click on the 

icon to switch to the burning area. You are then ready to burn the CD. For information on how to do this, please read the chapter 'Burning a disc'.

3.1.2 Background information for advanced users

This chapter describes the tabs not explained in the previous chapter (see the relevant subsections) as well as providing additional information on multisession CDs and describing the ISO and UDF file systems:

3.1.2.1 Additional tabs for data CDs

On the 'ISO' tab you can toggle between Mode 1 and Mode 2/XA format as required. You should not need to verify the format – in the past there were problems with CD drives that could not read Mode 1 CDs, but very few of these drives will still be in use today. If these options are grayed it means that selection is not logically meaningful at present. Mixing Mode 1 and Mode 2/XA tracks on a CD would result in an unreliable and potentially unreadable CD format. In the 'File/Directorynames length‘ section you can specify the ISO level for the length of the names. Up to 31 characters are permitted for Windows 95 and higher. Names cannot be more than 11 characters long for Windows 3.1 (8 for the name and 3 for the extension). ISO Level 2 will be best in most cases – if you know that the CD must also be readable on a Windows 3.1 system then you should select Level 1.

On the 'Label' tab you can give your CD a name and overtype the default name 'New'. You can use letters A-Z, digits 0-9 and the underscore character (_) – diacritics (accents) and spaces are not supported.

On the 'Dates' tab you can specify the date of the compilation and of its files. The current date and time are entered for the compilation as default, also the creation date of the files.

Use the 'Misc' tab to specify which files will be buffered in the cache. Files that are on slow media (floppy disks and network drives) and are very small are moved to the cache by default. You specify the location of the cache on the Cache tab in the **File** menu (**Preferences** option).

3.1.2.2 How are Multisession CDs structured?

This chapter explains the background to Multisession CDs and is pretty technical – it is intended mainly for users who already have some experience of CD burning and want to know a little more. The 'normal' user who just wants to create a Multisession CD with **Nero Burning ROM 7** can skip this chapter.

The ISO file system has a very useful feature that helps us to create Multisession CDs: The way files are stored in ISO tables of contents is that the absolute start block of each file and the file’s length in blocks is given. Absolute means that all blocks in all CD tracks are numbered sequentially.

So what happens when a file’s start block belongs to a different track than the one where the TOC you want to create is located? No problem! CD-ROM drivers and recorders will simply read the file from another track.

CDs are written session by session and track by track, so of course only tracks that have already been written can be addressed. This is why a reference track must be specified first when creating Multisession ISO CDs with **Nero Burning ROM 7**. **Nero Burning ROM 7** reads this track in and remembers the positions of the files that are on it. At the next write session these positions are then re-written for unchanged files.

Additional Multisession information on the CD

When a new Multisession CD is started, **Nero Burning ROM 7** saves not just the files and folders but also their source location on the hard disk. When a Multisession compilation is updated, this additional information is used to automatically replace, add or delete modified files.

Multisession CDs can still be created even if there is no additional **Nero Burning ROM 7** information on the reference track. The disadvantage of this however is that the references to the hard disk which we mentioned above will not be known to **Nero Burning ROM 7** and so there can be no automatic update.

3.1.2.3 Creating a data CD (not multisession)

The procedure for creating a data CD without multisession is identical to the procedure described in the chapter 'Creating a CD-ROM (ISO)'. You simply have to check the option 'No Multisession' on the 'Multisession' tab.

Please note that when a CD is burned without a multisession, a table of contents (TOC) for the CD is created at the end of the burn. If the 'Finalize CD‘ option is selected the CD is write protected and no further burning is possible. If this option is not selected then further sessions can be burned but only the last session is visible, so the CD looks like there’s nothing else on it – not so! We suggest that you use the 'Creating a data CD (with multisession)' option when creating a data CD with several sessions.

3.1.2.4 Creating a data CD (with multisession)

The procedure for creating the first session of a data CD with multisession is identical to the procedure described in the chapter 'Creating a CD-ROM (ISO)'. You simply have to check the option 'Start Multisession disk' on the 'Multisession' tab.

The procedure for creating the second and each subsequent session of a data CD with multisession is identical to the procedure described in the chapter 'Creating a CD-ROM (ISO)'. You simply have to check the option 'Continue Multisession disk' on the 'Multisession' tab and insert the CD containing the existing sessions in the recorder.

If you want to create a data CD that consists of several sessions, we advise that you create a Multisession CD. Every complete write process with **Nero Burning ROM 7** on a CD, from inserting the CD you want to write to the CD being ejected, generates a session on the CD. A session in turn contains one or more tracks. All CDs with several sessions are 'Multisession CDs'.

There are basically two types of Multisession CD:

- Multisession CD for linked files, e.g. for backups
- Multisession CD for independent files

Multisession CD for linked files

Multisession CDs are advisable, say, when making a weekly Backup of a number of folders on a CD.

When an ISO compilation is created the required folder is written to the CD in every new session. Since only a few files may have changed, writing the entire folder again would have the following disadvantages:

- Burning would take an unnecessarily long time because redundant data are being written each time.

- Valuable CD space would be wasted as the same data is copied a number of times.

With a CD-R, data can only be written to a CD but cannot be deleted or changed, so the following procedure is used with Multisession CDs:

Instead of writing the unchanged data again with every session (i.e. every backup procedure), **Nero Burning ROM 7** only writes cross-references to a previous CD track which contains the unchanged file. Only the changed files are completely re-written.

By activating the two checkboxes 'Replace files in compilation' and 'Add new files to compilation' in the 'Options' section you will ensure that this actually happens.

Of course when individual sessions are linked to one another there must be some way of ensuring that the tracks (which have a definite connection to an existing CD) are not written to another CD by mistake. This would make all files with references outside the tracks unreadable later on! For this reason **Nero Burning ROM 7** checks that the correct CD has been loaded for burning. If it hasn't, then the CD that has been loaded in error is ejected.

Multisession CD for nonlinked files

If the files in the file session you wish to burn are so small that further files can be added, and if you want to use all of the space on the CD, you can create a Multisession CD.

By clearing the two checkboxes 'Replace files in compilation' and 'Add new files to compilation' in the 'Options' section you will ensure that **Nero** will not search for links to existing files on the CD.

3.1.2.5 The ISO file system

Nero Burning ROM 7 normally writes ISO data in the CD sector format **Mode 1**. However **Nero Burning ROM 7** also supports the so-called 'XA-Format' for ISO data. The XA format is an extension of ISO structures and can only be burned onto the CD in 'Mode 2' (another CD sector format). 'Normal' ISO Mode 1 tracks behave just like Mode2/XA tracks when read under DOS/Windows and using modern CD-ROM drives.

The latest CD-ROM drives can easily read Mode 1 and Mode2/XA-CDs. However there are still some CD-ROM drives around that cannot read the Mode 1 CDs correctly. Owners of these older drives are advised to write data in the Mode2/XA-format.

ISO9660

ISO9660 is a file system that was designed with the aim of creating a file system that is as system-independent and so as compatible as possible. Discs with ISO9660 as the file system can be read on all operating systems.

ISO9660 supports filenames in 8.3 format in Level 1 (8 characters for the filename and 3 for the extension) and directory names 8 characters long. Only characters A-Z, 0-9 and the underscore (_) are allowed. The maximum interleaf depth is restricted to 8 levels (including root directory).

A total of 31 characters are allowed in Level 2 and can be read by Windows 95 and higher, whereas DOS and Windows 3.1 usually have trouble handling the long filenames.

ISO9660:1999

ISO9660 is a file system that was designed with the aim of creating a file system that is as system-independent and so as compatible as possible. The advantages of this file system lie in the length of possible file names (the ISO9660:1999 file system supports file names with a length of up to 207 characters) and the fact that restrictions on directory depth have been lifted.

3.1.2.6 The UDF file system

The UDF file system was developed when it became increasingly obvious that the ISO9660 file system used on CDs was no longer meeting the needs of rewritable media and DVDs. It was optimized mainly to accommodate large data volumes and to make it easy to modify an existing file system.

Nero Burning ROM 7 can burn UDF and so-called 'UDF Bridge CDs', which contain both a UDF and an ISO9660 file system. The UDF file system can be read by, say, Windows 98 and Windows 2000 with no special drivers. In case of doubt, Windows 2000 and Windows 98 also read the UDF file system if both an ISO9660 and a UDF file system are detected on the medium. Writing in UDF format is particularly important when burning DVDs because UDF is the preferred operating system for these media.

3.1.2.7 The UDF/ISO file system

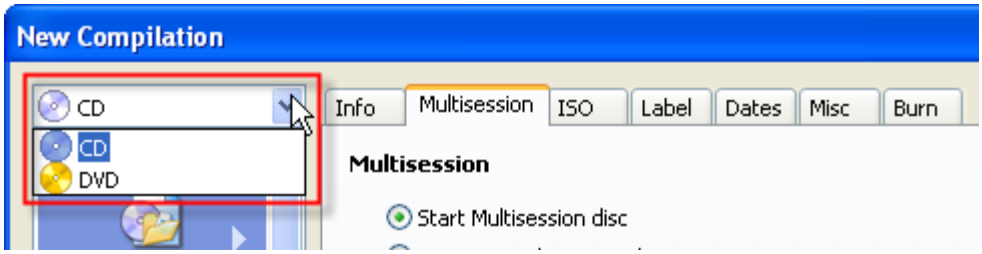
The big advantage of a UDF/ISO Bridge CD is that the data comply with both the UDF standard and the ISO standard. The data are only added to the compilation once and **Nero Burning ROM 7** automatically creates a UDF and an ISO table of contents. These two tables of contents allow the CD to be used as a Bridge CD.

3.2 Audio CD

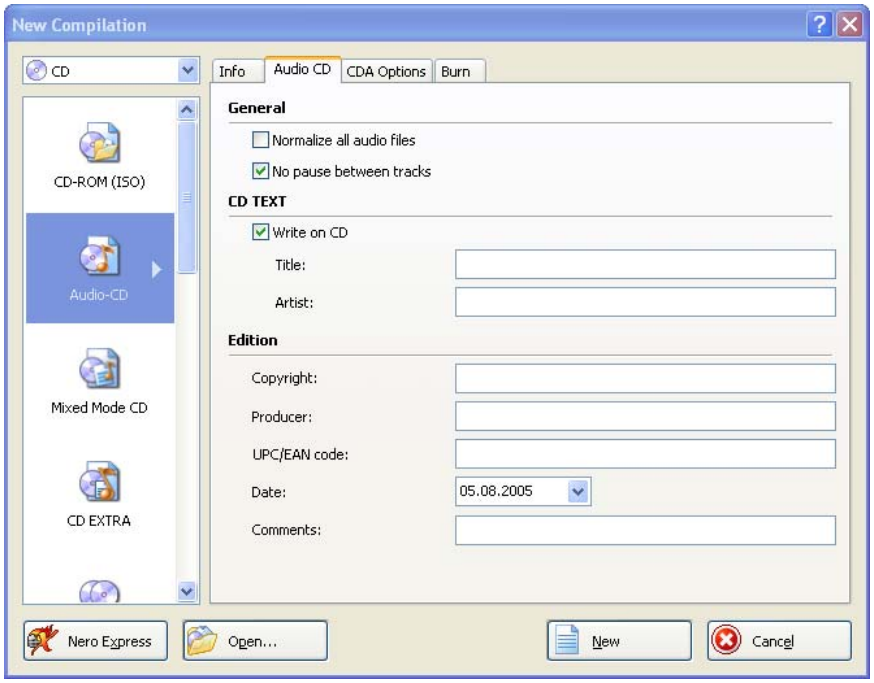
3.2.1 Creating an audio CD

An Audio CD is a CD that contains music files and that can be played with any regular CD player which you can buy in a store – the songs on the CD must either be in CDA format or be converted to this format.

1. Start **Nero Burning ROM 7**.
2. Click on the drop-down list box and select the media type 'CD'.



3. Select the 'Audio CD' compilation, thereby bringing the 'Audio CD' tab to the foreground. On this tab you can make certain settings.



General' area

Normalize all audio files: This check box activates a filter that equalizes the volume of the audio tracks to be burned. This is particularly recommended if the audio tracks to be burned are from different sources, as the differences in volume may then be significant.

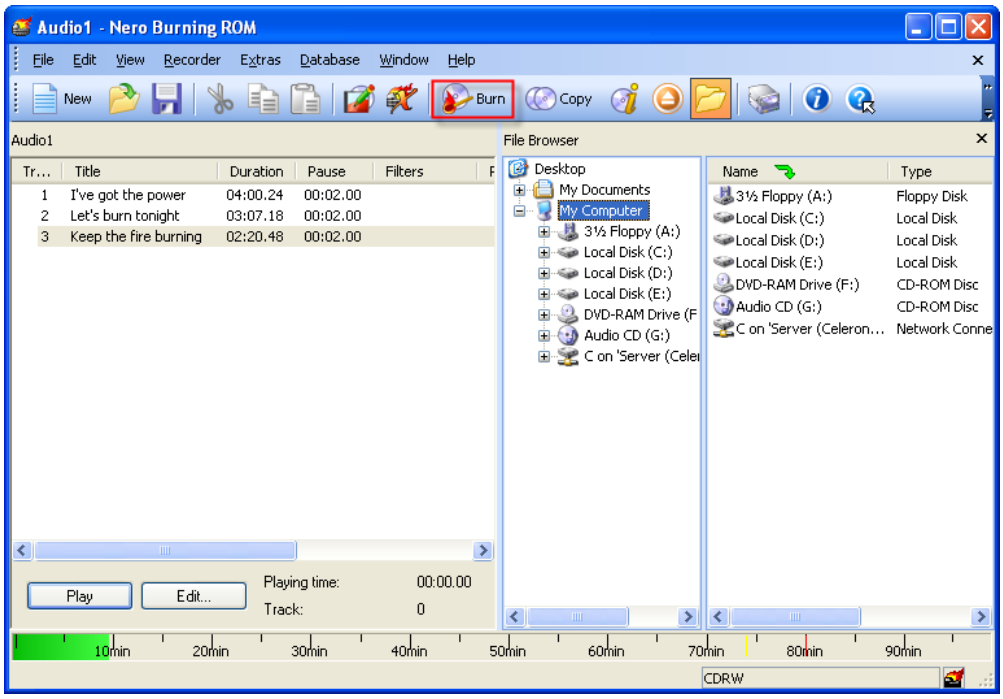
No pause between tracks: This check box defines whether there should be a pause of 2 seconds between the tracks on the audio CD or whether the tracks should transition from one to the next without pause as is the case with live recordings.

CD Text' area
Write on CD: This check box activates the option for writing CD text. CD text is additional information on an audio CD that displays the name of the CD, the individual songs and the artist on CD players that support this function.
Title: The name of the CD is entered here.
Artist: The name of the artist is entered here.

Edition' area
Here you can enter additional information.

4. Click on the 'New' button to finish selection of the compilation. The **Nero Burning ROM 7** file browser opens in which you select the audio tracks to be burned.
5. You have a number of options for adding the audio files.
   Option 1: You can insert audio files that are on a (non-copy-protected) audio CD.
   Option 2: You can insert audio files in the various formats (e.g. MP3, WAV, WMA) found on your PC.
   Select the desired audio files on the right-hand side of the file browser and drag them to the left-hand side. Repeat this step for all of the audio files.

If you have added audio files, you can listen to the individual tracks. To do so, click on the 'Play' button. If you have added audio files that are on the hard drive, you can edit these tracks. To do so, click on the 'Edit' button to open the **Nero Wave Editor 3**.



Additional filters and other options are available to you if you double-click an audio track. For further information, see the chapter 'Special audio filters'.

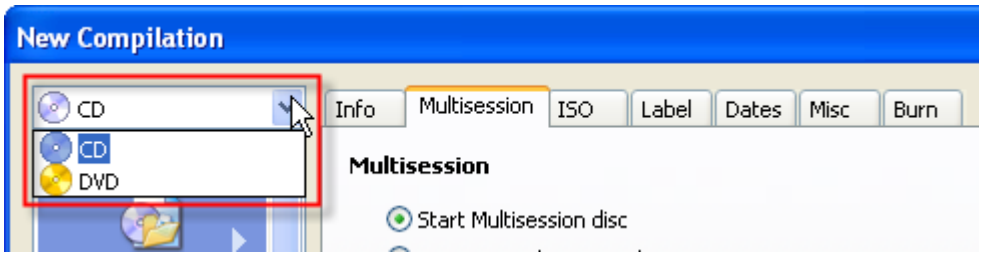
6. Click on the 

icon to switch to the burning area. You are then ready to burn the CD. For information on how to do this, please read the chapter 'Burning a disc'.

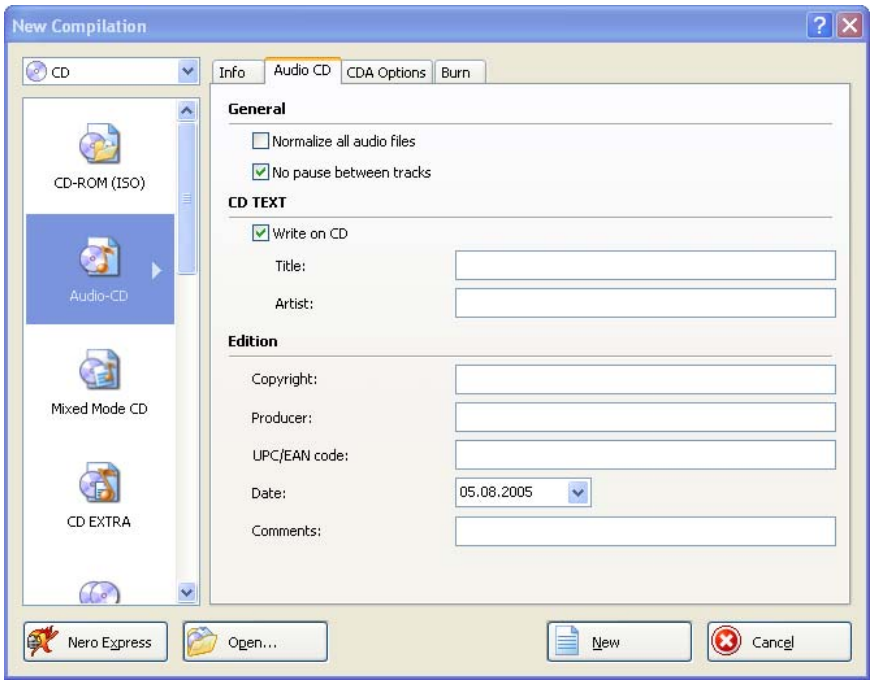
3.2.2 Extracting audio files from a CD and then burning them

If you have (non-copy-protected) audio CDs and wish to extract individual tracks from them to burn as a new audio CD, you can do so using **Nero Burning ROM 7**.

1. Start **Nero Burning ROM 7**.
2. Click on the drop-down list box and select the media type 'CD'.



3. Select the 'Audio CD' compilation, thereby bringing the 'Audio CD' tab to the foreground. On this tab you can make certain settings.



General' area

Normalize all audio files: This check box activates a filter that equalizes the volume of the audio tracks to be burned. This is particularly recommended if the audio tracks to be burned are from different sources, as the differences in volume may then be significant.

No pause between tracks: This check box defines whether there should be a pause of 2 seconds between the tracks on the audio CD or whether the tracks should transition from one to the next without pause as is the case with live recordings.

CD Text' area

Write on CD: This check box activates the option for writing CD text. CD text is additional information on an audio CD that displays the name of the CD, the

individual songs and the artist on CD players that support this function.
Title: The name of the CD is entered here.
Artist: The name of the artist is entered here.

Edition' area
Here you can enter additional information.

4. On the 'CDA Options' tab you can define the strategy which **Nero** should use to handle the CDA files on an audio CD. This setting is for advanced users, for more information read the chapter 'Dragging & dropping audio track'.
5. Click on the 'New' button to finish selection of the compilation. The **Nero Burning ROM 7** file browser opens in which you select the files to be burned.
6. Insert the first original CD from which you wish to extract audio tracks into your CD-ROM drive and open this drive with the File Browser.
7. Compile the CDA files for the first audio CD using 'Drag&Drop' editing by simply clicking on the required files in the File Browser and dragging them into the compilation window.

   Nero Burning ROM 7 now analyzes the source CD and the required CDA files and shows them in the File Browser. You will also see a small window in which you can enter a name for the source CD. This is for your own convenience so that when you select the reference strategy for writing Nero Burning ROM 7 can prompt you to insert the named CD that it needs for writing.
8. Now insert the second CD (the one with the audio files you want to burn) into your CD-ROM drive, select the File Browser and update the screen contents by pressing 'F5' (or select the 'Refresh' option from the 'View' menu).
9. Open the drive with the File Browser and compile the CDA files for the second Audio CD with 'Drag&Drop' as described above in Point 7.
10. Repeat the last three steps for each additional CD you wish to use.
11. You are then ready to burn the CD. For more information on how to do this, please read the chapter 'Burning a disc'.

If your burned Audio CDs crackle, hum or hiss, you probably have problems with the so-called 'Audio Jitter Effect'. This is due to basic problems which the hardware has when reading audio data and has nothing to do with **Nero Burning ROM 7**.

3.2.3 Background information for advanced users

Almost all CD players can only read CD-Rs, i.e. using rewritable CDs (CD-RW) is not recommended. **Nero Burning ROM 7** writes the audio data to the CD-RW correctly but many CD players will not be able to play back the tracks.

If possible, audio CDs should always be burned in the 'Disc-at-once' mode. This will make the most out of the features that **Nero Burning ROM 7** offers and will avoid unwanted 'hiss and crackle‘ between individual tracks.

A CD that contains music files in a variety of different formats (say MP3 or WMA) is strictly speaking an audio CD as well, but since a CD player cannot read these formats and play them back, these CDs are not referred to as Audio CDs.

Nero Burning ROM 7 does not mind what audio format the files are in because compressed files (e.g. MP3, mp3PRO, WAV, WMA or AIF) are automatically

converted prior to burning so that they can be burned in CDA format. However decoding these files takes a certain amount of time and so the burning speed may have to be matched to the PC's power and computing processes.

Although writing Audio CDs with **Nero Burning ROM 7** is really simple, it is worth spending a few moments thinking about your source medium. There are basically two ways of creating Audio CDs. With one method the audio tracks come from an Audio CD and with the other the audio files are on a hard disk.

- To copy an existing Audio CD, you will find all the information you need in the chapter 'Copying a CD'.
- If you wish to use tracks from an existing Audio CD and/or tracks from a number of Audio CDs, then there are several strategies with which **Nero Burning ROM 7** can handle the audio files. You will find further information about these strategies in the chapter 'Source medium is CD/DVD drive'. The information you require about burning will be found in the chapter 'Burning a disc'.
- If you want to use audio files that are on your hard drive, then the chapter entitled 'Source medium is hard disk' will explain the advantages of this option. The information you require about burning will be found in the chapter 'Burning a disc'.

Music CDs with a special copy protection have been around on the market for some time now. These CDs cannot be played or copied with a normal PC. If you experience problems with copying, please make sure that you are not using CDs of this type. You can identify this from a note on the cover of the original CD.

3.2.3.1 Source medium is CD/DVD drive

Dragging & dropping audio tracks

When dragging & dropping audio files that are on a CD (CDA) the user has a basic choice of four different strategies with which **Nero Burning ROM 7** can handle the CDA files. The strategy is selected on the 'CDA Options' tab. You will see this tab in the 'New Compilation' dialog box which opens when you create a new compilation. If a compilation is already open, select your required strategy or check the selected strategy in the 'File' menu with the 'Compilation Properties' option.

The 'General Settings' section offers you a choice of four different strategies:

- Diskspace strategy (the default)
  With this strategy the CDA files are buffered in **Nero Burning ROM 7's** cache directory if sufficient space is available. If no space is available then a track reference is created.
- Tempfile strategy
  With this strategy the CDA files are buffered in **Nero Burning ROM 7's** cache directory if sufficient space is available. If no space is available, an error message is displayed.
- Reference strategy
  The CDA files are handled as track reference. The source medium can only be a CD/DVD drive, not a recorder.
- Device dependant strategy
  CDA files are handled as track reference where possible, otherwise the tempfile strategy is used.

The diskspace and tempfile strategies can be used to burn in 'Disc-at-once' mode. We advise that you use one of these two strategies.

The reference strategy can only be used for 'Track-at-once' burning and can only be read by CD/DVD drives, **not** by recorders. The reason why 'Track-at-once' must be used with this strategy (it is preset) is that when you use files that are on an interchangeable medium you may need to switch the source CD if the audio files come from different source CDs or if a track has to be approached at a remote read position on the source CD. This can mean a long wait between tracks however. In the 'Track-at-once' mode the wait between tracks can be any length of time without ruining the target CD.

The burning mode that can be used with the device dependant strategy depends on the source medium, i.e. if the tracks are from a CD/DVD player, then only a reference is created and only 'Track-at-once' can be used.

The chapter 'Extracting audio files from a CD and then burning them' explains how to burn compilations created with drag&drop editing.

Copying audio tracks

Copying CDA files to a hard disk offers the user more ways of using audio files. Unlike drag&drop, tracks can be converted to other formats.

You will find full details about copying CDA files in the chapter 'Saving audio tracks'.

3.2.3.2 Source medium is hard disk

The **advantage** of burning audio files that are on a hard disk is that the CD can be written using 'Disc-at-once'. This means that you can get more out of the functionality of many recorders. For example, you can write CD text, specify the pause length or set additional index positions - these capabilities are only available with 'Disc-at-once'.

The disadvantage is that the audio files need storage space on the hard disk. Depending on the audio format, around 10 MB per minute is required (in WAV format). If the files are compressed, e.g. in MP3 format, then the space requirement is cut by 90%. You can test the advantages of MP3 compression with **Nero Burning ROM 7**: You can convert up to 30 audio files to MP3 format. The chapter 'Saving audio tracks' tells you how to do this.

3.2.3.3 Audio track properties

Double click one (or more) audio files to open the 'Audio Information' dialog box. The tab offers you a wide variety of options. The main ones are:

'Audio Track Properties' tab

If your recorder supports the writing of CD Text, you can insert information for CD Text on this tab.

You will find further information about CD Text in the chapter 'CD-Text'.

You can also specify the length of the pause between tracks – the default pause between two tracks is 2 seconds.

You may feel that a pause between tracks is irritating, especially with live recordings. In this case set a pause length of 0 seconds. You can create a cross fade between two audio tracks, so the new number starts to play quietly while the current number is still playing. The current track will meld into the new track without a break. In this case activate the checkbox and specify the seconds for the fade.

'Indexes, Limits, Split' tab

The top part of the tab shows the progress of the audio track as a graph.

The 'New Index' button sets a new index position at the selected position. For a CD player this is the position from which a new number starts and the player can also jump to it directly.

Not all CD players support this function.

The 'Split' button splits the audio track at the selected position, i.e. the track is physically split and becomes two (or more) tracks. These split tracks behave just like two independent tracks, so they can be named and the pause between them can be specified.

The 'Play button plays the track from the selected position. While the track is playing the button switches to a 'Stop' button.

The 'Delete' button deletes a selected new index position or the position for a split track.

'Filter' tab

You will see a number of filters on the left. The settings on the right change depending on the selected filter.

To select a filter, activate its checkbox. The 'Test Selected Filters' button plays the audio track - this lets you check that you are happy with the result before you confirm the changes.

3.2.3.4 CD-Text

CD-Text is an extra item of information on Audio CDs which allows newer style CD players to display the CD title and the names of the tracks and artists. Your CDs will be played correctly even if your CD player does not support CD-Text. This is possible because the additional CD-Text information is stored in the CD's so-called 'lead-in' area before the start of the audio data.

Creating CDs with CD-Text is only possible when two conditions are met: Your recorder must support this function **and** the CD must be burned in the 'Disc-at-once' mode.

Creating an Audio CD with CD-Text

CD-Text cannot be written to a CD unless this function is supported by the CD recorder you are using **and** the disc is written in the **'Disc-at-once'** mode. A CD

can always be written in 'Disc-at-once' mode is the audio files are on a hard drive. The use of 'Disc-at-once' for compilations of Audio CDs depends on the selected strategy. You will find full details about this topic in the chapter 'Dragging & dropping audio track'.

You can see whether your recorder can write CD-Text by selecting the 'Choose Recorder' option from the 'Recorder' menu. Now highlight the required recorder and read the information.

In the same way you can also check whether your recorder supports 'Overburn', 'Buffer Underrun Protection' and 'Disc-at-once'.

Create an Audio CD as described in the chapter 'Extracting audio files from a CD and then burning them'. Please note the following points:

- First, create a new audio compilation and drag the audio tracks you want into the compilation.
- From the 'File' menu, select 'Compilation Properties' and on the 'Audio CD' tab check the 'Write CD-Text to the CD' checkbox.
- Enter the title of the CD and its artist. These entries should not be longer than 64 characters each.
- In the compilation window click an audio track and enter the track's title and artist on the tab.
- Before writing, make sure that the 'Disc-at-once' mode is active.
- Now click the 'Burn' button to write the Audio CD with CD-Text.

Viewing CD-Text information

You can view CD-Text on Audio CDs provided the selected read drive supports the reading of CD-Text. Recorders that can write CD-Text can do this.

- Insert an Audio CD into the recorder.
- Select the Save Tracks option from the 'Recorder' menu and choose the drive you require.
- Now view the information you want in the 'Title' and 'Artist' columns.

Copying CDs with CD-Text information

Burning ROM 7 automatically copies the existing CD-Text if the reading drive and the selected recorder both support CD-Text. This applies to both image copies and on the fly copies.

3.2.3.5 Special audio filters

If you are unhappy with the quality of your audio tracks, **Nero Burning ROM 7** offers a range of filters can enhance the quality of the music tracks or change the tracks. The tracks are edited 'non-destructively' which means that the actual recording is not affected and only selections are set. The big advantage of the non-destructive method is that editing steps can be undone at any time and no additional audio data are created as you work. The audio files are not actually changed until they are written.

The filters are found in the 'Audio Information' dialog box on the 'Filter' tab. The window is opened by double clicking an audio track in the compilation window.

Clicking the 'Test Selected Filters' button plays the audio track - this lets you check that you are happy with the result before you confirm the changes.

- Normalizing
  If the audio tracks you are burning come from different sources then the volume of the individual tracks can be matched with this filter. All audio tracks in the compilation must have been selected for this filter to function correctly.
- Declicking
  This is used to remove clicking noise when the audio file comes from a scratched vinyl.
- Hiss Reduction
  This filter reduces the hiss of an audio file by removing the frequency components that are below a certain value.
- Fade In
  This filter fades the audio track in from silence to full volume.
- Fade Out
  This filter fades the audio track out from full volume to silence.
- Stereo Widening
  This filter changes the intensity of the stereo effect with stereo recordings.
- Karaoke
  This filter removes those parts of a song that are equal on both stereo channels. This is usually the vocal so this effect can be used for karaoke CDs. Please also refer to the chapter: 'Creating a Karaoke CD'.
- Echo
  This effect provides a number of options for echo effects.
- Equalizer
  This effect opens an equalizer so you can change the volume in different frequency ranges.

The **Nero Wave Editor 3** program which is part of the **Nero Burning ROM 7** package provides you with even more filters and different audio editing options. To locate this program, select Start > Programs > Nero > Nero 7> Nero Wave Editor.

3.2.3.6 Creating a Karaoke CD

Creating a karaoke CD is rather complex because the karaoke filter must be set individually for each song.

Create an Audio CD as described in the chapter 'Extracting audio files from a CD and then burning them'.

Please note the following points:

- First, create a new audio compilation and drag the audio tracks you want into the compilation.
- In the compilation window, double click the song on which you want to set the karaoke filter.
- Activate the 'Karaoke' filter on the 'Filter' tab.

- Specify the strength of the effect, the vocal balance and the quality of the conversion.
- Click the 'Test Selected Filters' button to play the song and ensure that you are happy with the result. If you are not happy, change the effect strength and vocal balance, and test again.
- Now click 'OK' to confirm your changes and close the dialog box. The name of the filter will appear in the 'Filter' column in the compilation window.
- Now repeat the relevant points for each additional song.
- Burn the karaoke CD when you have converted the songs.

3.2.3.7 Recording records

The **Nero Wave Editor 3** lets you digitize records and save them on hard disk. You will find detailed instructions on how to do this in the quick guide and the program's online help. When a record is recorded, two tracks are created (one from the from and one from the back). When these two tracks are burned the songs would not be individually controllable with a CD player. The track has to be split to make this possible. The chapter 'Splitting tracks' tells you how to do this.

3.2.3.8 Splitting tracks

Very long audio tracks can be split so that specific passages within the track can be triggered directly and/or become a separate track in their own right Long audio tracks are created, for example, when copying from record to hard disk, and they can be split before they are burned.

1. Double click the required track in the audio compilation and click the **Indexes, Limits, Split** tab.
2. Select the position where you want to split the track.
3. Click the **Split** button.
4. Click **OK** to close the window and confirm that you really want to split the track.

3.2.3.9 Encoding

Encoding an audio file means compressing it. With **Nero Burning ROM 7** you are able to convert audio tracks to the most popular formats such as MP3 and mp3PRO. When they are burned, **Nero Burning ROM 7** treats these formats just like other audio formats, so they can be used to create Audio CDs without difficulty, i.e. the compressed files are automatically decoded before they are burned.

MP3 and mp3PRO

Because of its good audio quality and small file size the MPEG3 audio format (with the extension MP3) has become the format most used to transmit audio data on the Internet. This is why **Nero Burning ROM 7** also supports the burning of the popular MP3 files - **Nero Burning ROM 7** handles them just like any other audio files and they are automatically decoded before burning.

You can test the **Nero Burning ROM 7** mp3PRO encoder plugin as soon as **Nero Burning ROM 7** is installed. You can encode up to 30 audio files or pieces of music from CD in the popular MP3 or mp3PRO format.

mp3PRO files can be compressed to half the size of the conventional MP3 files with the same quality. These two file types have the same extension: mp3.

MP3 Plugin

The MP3 plugin uses the brand new and ultrafast MP3 encoder from the Fraunhofer Institut, the inventors of MP3. With the MP3 encoder you can condense your favorite pieces of music down to 10 % of their original size. And with virtually no audible loss of quality! Nero AG would like nothing better than to let its users create as many MP3 files as they want but we **cannot** do this for licensing reasons as the rights are held by Fraunhofer Institut and we would need to pay them fees. That's why you can only test the encoder 30 times. If after that you wish to continue using the encoder, you will find further information about buying the mp3PRO plugin in the Webshop.

mp3PRO Plugin

The mp3PRO plugin uses the brand new and ultrafast mp3PRO encoder from Coding technologies, the inventors of mp3PRO. With the mp3PRO encoder you can condense your favorite pieces of music down to 5 % of their original size. And with virtually no audible loss of quality!

Nero AG would like to offer you the opportunity to create any number of mp3PRO files, but for licensing reasons this is **not** possible, because Coding Technologies owns the rights to the encoder, which means that license fees would have to be paid. That's why you can only test the encoder 30 times. If after that you wish to continue using the encoder, you will find further information about buying the mp3PRO plugin in the Webshop.

The high processing power needed to decompress MP3 files means that the maximum possible burning speed will depend on the power of your PC. As a 'rule of thumb' we can say that Pentium systems with a clock speed over 100Mhz should be capable of burning at twice the speed. Computers of Pentium II class and higher should be capable of burning 4 or even 8 times faster. Pentium III or IV PCs can achieve even higher burn speeds.

MP3 files downloaded from the Internet may be damaged by transmission errors. Such problems may affect the sound. **Nero Burning ROM 7** displays a warning telling you if damaged MP3 files have been added to an audio compilation. During writing, damaged files are logged with the warning message 'Lost sync within the MP3 stream'.

The MP3 library used by **Nero Burning ROM 7** only supports the MPEG Layer3 standard format at present. A similar error message appears if **Nero Burning ROM 7** receives MP3 files for decoding and its MPEG3 library cannot process the file format.

Audio CDs

The encoding method described in this chapter is only suitable for tracks on Audio CDs. The encoding of audio files that are on hard drive is described in the chapter 'Encoding tracks that are on hard disk'.

When you encode audio tracks you can save the encoded and saved tracks as an M3U playlist. You will find full details about this topic in the chapter 'M3U Playlists'.

1. Load the Audio CD with the tracks you wish to encode in a CD drive.
2. Select 'Save Track' from the 'Extras' menu.
3. Select the drive that contains the CD with the tracks that are to be encoded.
4. Highlight the audio tracks you wish to encode.
5. Select the output file format by clicking the dropdown button and highlighting the required format.
6. Click the 'Settings' button and specify the required encoding quality and bitrate.
7. Choose the path for saving the audio file. If the audio file has no meaningful name, you can click the button with the three dots on it and rename the file.
8. Click the **Start** button to start encoding - a window shows you how encoding is progressing.
9. When encoding is complete, click **Close** to close the window.

Encoding tracks that are on hard disk

The encoding method described in this chapter is only suitable for audio tracks that are located on a hard drive. If you wish to encode tracks from an Audio CD please refer to the chapter '

Audio CDs'.

1. Select 'File Encoding' from the 'Extras' menu.
2. Click the 'Add' button and select the directory containing the audio tracks you wish to encode.
3. Highlight the audio tracks you wish to encode.
4. Click the 'Settings' button and specify the required encoding quality and bitrate.
5. Choose the path for saving the audio file. If the audio file has no meaningful name, you can click the button with the three dots on it and rename the file.
6. Click the 'Start' button to start encoding - a window shows you how encoding is progressing.
7. When encoding is complete, click 'Close' to close the window.

Burning encoded files

If the audio files you wish to encode are in a compressed format (MP3) then **Nero Burning ROM 7** will decompress them automatically before burning. Just open an audio compilation and pull the compressed files you want into the compilation window with drag&drop.

3.2.3.10 Decoding

Converting compressed audio tracks is called decoding. Unlike encoding, with decoding it makes no difference what medium the audio tracks are on.

Decoding audio tracks

1. Select 'Encode Files' from the 'Extras' menu.
2. Click the 'Add' button and select the directory containing the audio tracks you wish to decode.
3. Highlight the audio tracks you wish to decode.
4. Click the 'Settings' button and specify the frequency, bitrate and channels.
5. Choose the path for saving the audio file. If the audio file has no meaningful name, you can click the button with the three dots on it and rename the file.
6. Click the 'Start' button to start decoding - a window shows you how decoding is progressing.
7. When decoding is complete, click 'Close' to close the window.

3.2.3.11 M3U Playlists

Nero Burning ROM 7 supports lists of audio files in the ASCII text format which are labeled as playlists and are in M3U format. They can be edited using Windows Notepad, for example. If you drag an M3U file into the compilation window, **Nero Burning ROM 7** will add all the files on the playlist to the audio compilation.

A great additional benefit with M3U playlists is that you can also specify information about the artists and titles in an audio file. In this way you can even

import title and artist information if the audio tracks have been saved as WAV files. WAV files do not normally allow artists and titles to be saved. When an M3U playlist with title and artist information is read by **Nero Burning ROM 7** however, this information is also imported.

M3U files can also be created, for example with the help of one of the MP3 play programs that are available on the market. Once you are happy with your music compilation it can be easily added to an audio compilation by dragging and dropping the playlist.

Creating M3U Playlists

Playlists can be created with **Nero Burning ROM 7** when you save or decode Audio CDs.

1. Insert the required CD into a CD drive.
2. Select 'Save Track' from the 'Extras' menu.
3. Select the drive with the CD inserted.
4. Click the 'Options' button at the bottom of the window.
5. Activate the 'Automatically generate a M3U playlist of stored audio‘ checkbox.
6. Highlight the required audio tracks.
7. Click the 'Settings' button and specify the required encoding quality and bitrate.
8. Choose the path for saving the audio file. If the audio file has no meaningful name, you can click the button with the three dots on it and rename the file.
9. Click the 'Start' button to start saving - a window shows you how the save is progressing.
10. When copying is complete, give the playlist a name and click 'Save'.
11. When the save is complete, click 'Close' to close the window.

3.2.3.12 The Nero CD database

Unfortunately most Audio CDs contain no information about the tracks that are on them – only Audio CDs with CD Text do this. When an Audio CD is created this means that the titles and artists of the tracks usually have to be entered manually. However **Nero Burning ROM 7** has a built-in CD and title database designed to locate the titles, artists and all the tracks on an officially released Audio CD. This is achieved with a kind of ‘fingerprint’ on the CD. The information obtained in this way can be used or a range of purposes, such as:

- Generating meaningful filenames when saving audio tracks (see also: Encoding). These filenames make it easier for you to compile your own Audio CDs and also provide the information that is printed on the cover by **Nero Cover Designer**. Information about the title and artist is also saved in the audio file provided the audio file format allows this. This is possible with MP3 and WMA (MS Audio) files for instance, but not with WAV files.
- Automatic addition of CD-Text when copying Audio CDs. This makes it possible to create CD copies that are in a way better than the original because they get more information. With the added CD-Text, an audio CD player with the right equipment can display the title and artist on a CD.

Importing the program database

Depending on how your PC is configured, the database can take up to one day (!) of processing time to import! This is unavoidable because of the sheer size of the database and the large number of cross-references that **Nero Burning ROM 7** has to create. Once imported however, read access to the database is very fast. You can cancel the download at any time but we do not advise this, as it **CANNOT** be resumed. The database would have to be imported again and this would create double entries.

1. Select 'Import Internet Database' from the 'Database' menu.
2. Select the drive that contains the unzipped directory.
3. Select the destination path for the database.
4. When the import is complete you will see a window asking you if you wish to use this database as the **Nero Burning ROM 7** program database. Click **Yes** to confirm your choice.

Creating a user database

Unlike the program database which contains information about published CDs, the user database is suitable for your own CD compilations. Creating a user database will ensure that information about CDs you have created yourself is not lost if the program database is overwritten.

1. In Windows Explorer create a directory (target directory) to hold the user database.
2. Select 'Create a New User Database' from the 'Database' menu and highlight the destination path for the new user database.
3. When the import is complete you will see a window asking you if you wish to use this database as the user database. Click 'Yes' to confirm your choice.

Configuring local Nero databases

If when you imported the program database/user database you answered 'Yes' when asked if you want to use these as your new database(s), then the directories are entered automatically. However you can still review the settings on the relevant tab after you have imported the database(s).

Before using the **Nero** database just take a little time to make sure that the settings are right. To configure these settings, select 'File' > 'Options' and then the 'Database' tab. You will see that there are three setting areas.

Configuring the Internet database for reading

As well as the local database, **Nero Burning ROM 7** supports access to Internet databases with CD information that comply with the so-called CDDB standard. The free Internet CD database 'http://freedb.freedb.org' is preset as a preference - **Nero Burning ROM 7** can access this directly on the Internet provided you have an Internet connection.

- Select 'Options' from the 'File' menu and click the 'Database' tab.
- Check that 'freedb.freedb.org' is preset as the read server in the 'Use Internet CD database' area.
- Check that '/~cddb/cddb.cgi' is set as the address.

- Check that '80' is entered as the port.

Remember that errors made in keying these parameters are likely to cause network failures. When you change these parameters you must also make sure that correct spelling is used. If you are using a proxy server you should enter the data required to access your proxy server in the Proxy Configuration dialog box. If you don't have the necessary information, please ask your network administrator or Internet provider. If in doubt, try without a proxy server first.

Configuring the Internet database for writing

As well as downloading CD descriptions from the Internet database you can also make them accessible for other users. In this way you can help improve the quality of the Internet database when you own a CD that does not exist in either the local or the Internet database. This does not apply to CDs with tracks you have compiled yourself. However since it is unlikely that anyone else owns an identical CD, entries about such CDs should not be uploaded to the Internet database, as this would create meaningless CD entries.

1. Select 'Options' from the 'File' menu and click the 'Database' tab.
2. Activate the 'Submit E-Mail address' checkbox and check that 'freedb-submit@freedb.org' is shown as the address.
3. Enter your email address and the name of the SMTP server in the boxes provided. Please ask your network administrator or Internet provider for the name if you do not have this information.
4. The 'Application Name' field shows the name and version of the program used to upload CD database entries – i.e. Nero Burning ROM 7 and the installed program version.

When uploading CD entries remember that Internet databases are not normally updated immediately by the Internet database administrators as new entries must first be checked for plausibility. This means that if you upload a CD description today, it would probably not appear on the Net for several days.

Configuring database settings

Information from the CD databases can be used for a variety of purposes. You will find the necessary checkboxes in the lower section of the 'Database' tab:

- Open the database during 'Save Track':
  When this checkbox is activated **Nero Burning ROM 7** opens the database dialog box when the 'Save Track' option is selected from the 'Recorder' menu. You can now save the necessary information when you convert audio tracks to audio files. See also: 'Saving audio tracks'.
- Open the database during 'CD Copy':
  When this checkbox is activated **Nero Burning ROM 7** opens the database dialog box while the Audio CD is being copied. **Nero Burning ROM 7** uses the information obtained in this way to create CD-Text. If you do not have a recorder that can write CD-Text, you can also use the information to create a cover for the CD with the **Nero Cover Designer**. The information about the audio tracks will be automatically added by **Nero Burning ROM 7**.
- Open the database during '*.cda Drag&Drop':
  When this checkbox is activated **Nero Burning ROM 7** opens the database

dialog box while Audio CDs are being dragged and dropped. There is no need for you to enter a name for the CD and the tracks added to the compilation.

The database dialog box and how it is used in Nero

Depending on how **Nero Burning ROM 7** is configured the database dialog box appears on many different occasions, such as when copying Audio CDs or saving audio tracks to harddisk. This is done to get information about titles and artists on the CD and its tracks. This is then used to create CD Text information or to generate meaningful filenames when tracks are saved. The database dialog box first tries to get CD Text information about the loaded CD from the source drive. If this information is available, the dialog box is not opened. If CD-Text information cannot be obtained (for example because the CD contains no CD-Text or the source drive does not support CD-Text), then the dialog box is opened. It now searches in the **Nero** CD database (if installed), in the user database (if installed) and in the Internet database if required. Another feature is that it searches through the database of the Windows CD player which can also manage a list of CDs that have already been detected.

The search results are then shown in a list. The dialog box may find several different entries or none at all. There can be several different entries when different CDs have the same ‘fingerprint’. This 'fingerprint' is obtained from the start positions of the individual tracks, the number of tracks and the playing time of the CD. It is obvious that CDs with the same number of tracks, the same playing time and the same track start positions will also have the same 'fingerprint'. Neither **Nero Burning ROM 7** nor the Internet database can tell them apart. There will be different entries for an existing CD. It will be down to the user to select the correct entry. Other errors can be caused by the fact that many older recorders did not have the ‘Disc-at-once’ mode. Without this mode the start positions of the tracks on the CD can 'slip'. If an inaccurate CD copy like this is used for uploading, then there will be duplicates of CD entries, or CDs that are actually in the database will not be found. This is a problem you will unfortunately have to live with in the CD database.

If there is no entry in the list of possible CDs and if no suitable entry can be found in the Internet database either ('Access Internet Database' button), then the only solution is to define your own entry. You can create this entry by clicking 'Create A New CD Entry'. Don’t forget to enter the title and artist for every track. This is particularly important if you intend to upload your CD entry to the Internet at a later time. There is no sense in ‘burdening‘ the Internet database with incomplete entries.

However we recommend that you only make newly created CD entries available to the general public on the Internet for purchasable original CDs. Likewise, there is no sense in uploading descriptions of CDs you have compiled yourself as they will only clog up the Internet database and in any case no other user should own this special CD. Please remember too that you can only upload entries in ASCII characters to the Internet database. This database does not support special characters such as German ‘umlauts‘ or special Asian characters. Special characters should therefore be written out in ASCII notation, e.g. 'Marius Mueller Westernhagen' instead of 'Marius Müller Westernhagen'.

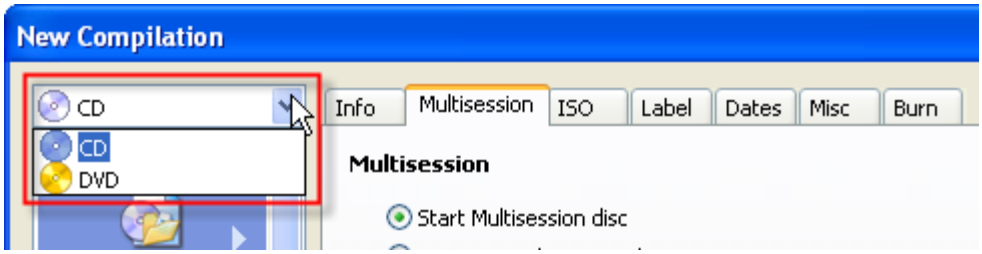
The selected entry is used by **Nero Burning ROM 7** as a source of information for artist and title entries and entered in the user database where it can be used for future access to the CD. If you do not wish to use an entry, click 'Cancel'.

3.3 Mixed Mode CD

A Mixed-Mode CD is a CD with different file formats in a single session. A data track followed by one or more audio tracks (e.g. a soundtrack with PC games) is a typical example. Older audio CD players are often unable to recognize the data track as such and attempt to play it. The CD EXTRA format has been developed to combat this problem. Please refer to the section 'CD EXTRA'.

3.3.1 Creating a Mixed Mode CD

1. Start **Nero Burning ROM 7**.
2. Click on the drop-down list box and select the media type 'CD'.



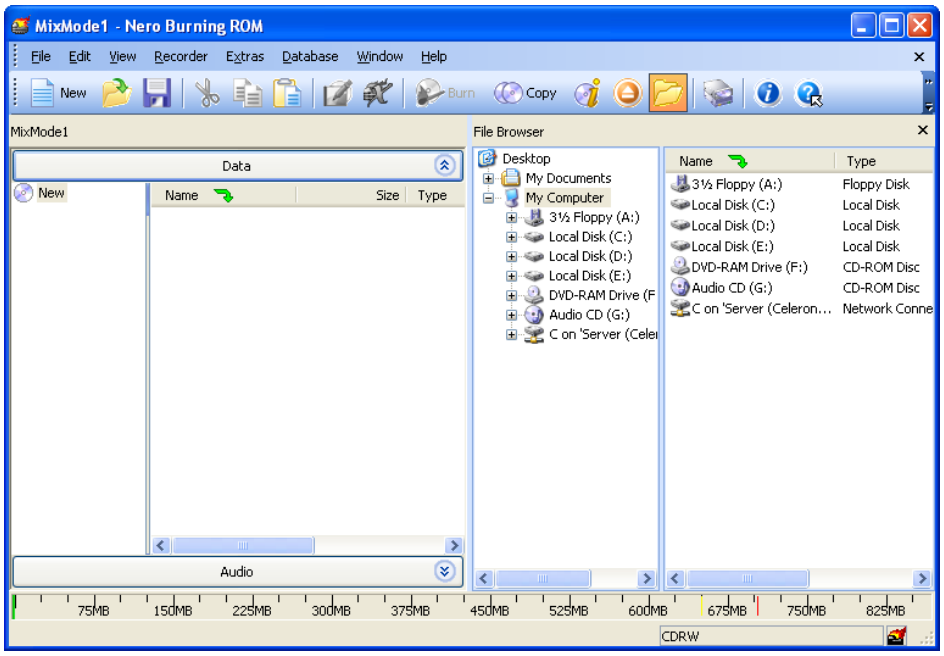
3. Select the 'Mixed Mode CD' compilation, thereby bringing the 'Iso' tab to the foreground. On this tab you can select the data mode and the file system, among others.
4. Click on the 'New' button to finish selection of the compilation. The **Nero Burning ROM 7** file browser opens in which you select the files to be burned.
5. The file browser contains a compilation area for audio tracks and for data files. Click on the 'Data' button if you would like to insert files. Select the desired files on the right-hand side of the file browser and drag them to the left-hand side. Repeat this step until all of the files are in the compilation area of the file browser.

You will find further information on adding data files in the chapter 'Creating a CD-ROM (ISO)'.

6. Click on the 'Audio' button if you would like to insert audio files. You have a number of options for adding audio files.
   Option 1: You can insert audio files that are on a (non-copy-protected) audio CD.
   Option 2: You can insert audio files in the various formats (e.g. MP3, WAV, WMA) found on your PC.

   Select the desired files on the right-hand side of the file browser and drag them to the left-hand side.
   Repeat this step until all of the files are in the compilation area of the file browser.

You will find additional information on adding audio files in the chapter 'Creating an audio CD'.



7. Click on the 

icon to switch to the burning area. You are then ready to burn the CD. For information on how to do this, please read the chapter 'Burning a disc'.

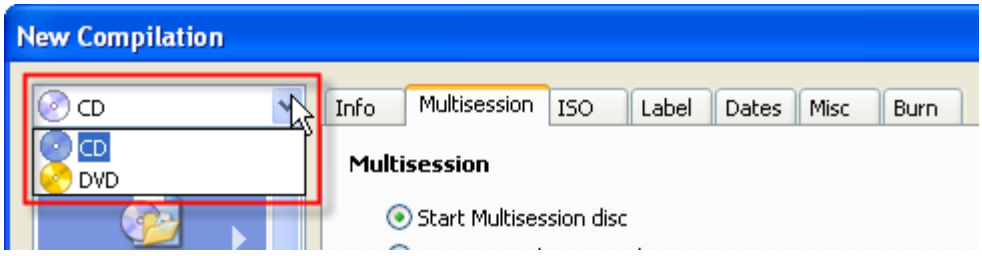
3.4 CD EXTRA

A CD in the CD EXTRA format (also known as an Enhanced CD) is a Multisession CD that consists of two sessions: the first session contains the audio files and the second session the data.

Existing normal audio CD players play the first session as an Audio CD. The second session contains data files whose contents may relate to the audio track in the first session, for example with song lyrics and background information about the music, or they may just contain gimmicks in the form of video clips. The second session can only be used by PCs with a CD-ROM drive, it cannot be ‘seen‘ by a normal CD player.

3.4.1 Creating a CD EXTRA

1. Start **Nero Burning ROM 7**.
2. Click on the drop-down list box and select the media type 'CD'.



3. Select the 'CD Extra' compilation, thereby bringing the 'CD EXTRA' tab to the foreground. You can use the text boxes on the 'CD EXTRA' tab to specify the

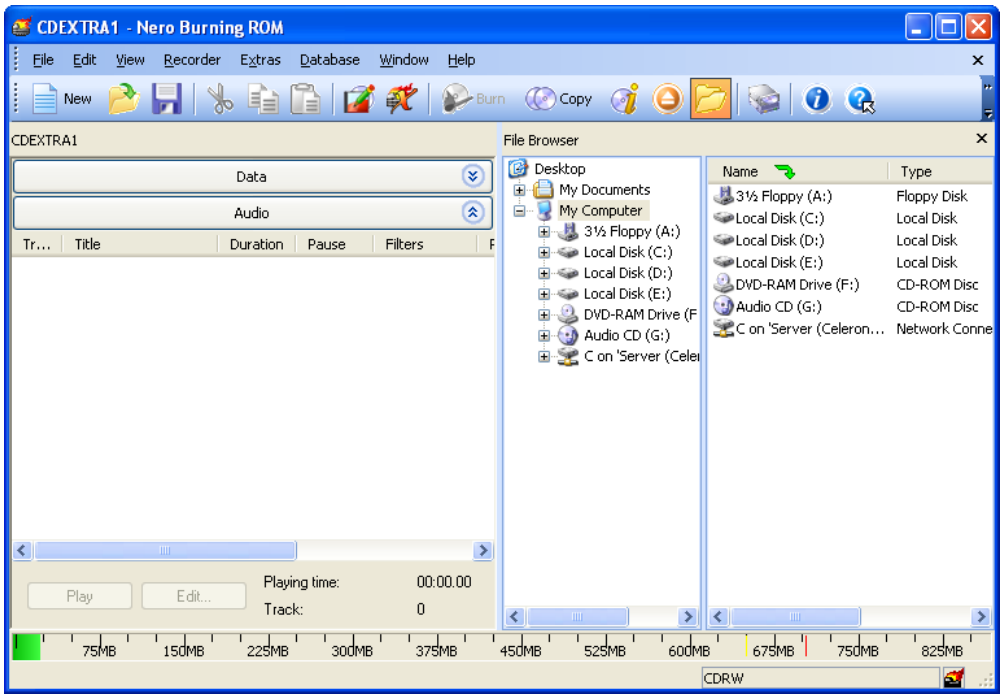
album identification. This is particularly useful when the album is to comprise of several CDs. You can also specify the number of volumes in the album and the album set sequence number. The default for the number of volumes and the sequence number is 1.
The **Pictures** button opens a dialog box where you can select two pictures to be saved on the front and back of the CD. You can also specify the color format for the encoding resolution for all of the pictures that will be written to the CD.
A CD EXTRA can contain information in different languages. Click the **Add** beneath the 'Language' window to select these languages from a list of countries. You could enter the album title for each language, for example.
You should specify at least one language. When you highlight a language you can enter a name in the 'Album Title' box.

4. Click on the 'New' button to finish selection of the compilation. The **Nero Burning ROM 7** file browser opens in which you select the files to be burned.
5. The file browser contains a compilation area for audio tracks and for data files. Click on the 'Data' button if you would like to insert files. Select the desired files on the right-hand side of the file browser and drag them to the left-hand side. Repeat this step until all of the files are in the compilation area of the file browser.

You will find further information on adding data files in the chapter 'Creating a CD-ROM (ISO)'.

6. Click on the 'Audio' button if you would like to insert audio files. You have a number of options for adding audio files.
Option 1: You can insert audio files that are on a (non-copy-protected) audio CD.
Option 2: You can insert audio files in the various formats (e.g. MP3, WAV, WMA) found on your PC.
Select the desired files on the right-hand side of the file browser and drag them to the left-hand side.
Repeat this step until all of the files are in the compilation area of the file browser.

You will find additional information on adding audio files in the chapter 'Creating an audio CD'.



7. Click on the 

icon to switch to the burning area. You are then ready to burn the CD. For information on how to do this, please read the chapter 'Burning a disc'.

3.5 Bootable CD and DVD

3.5.1 Conditions

A PC can only be booted from a CD when its BIOS supports this function (start sequence e.g. 'CD-ROM, C, A') or, if a SCSI CD-ROM drive is being used, the drive must be connected to a SCSI adapter with its own BIOS whose settings can be changed accordingly. (This will only work when there are no IDE harddisks present as these come before the SCSI adapter in the boot sequence.)

If neither of these conditions is met then the PC cannot be booted from a CD-ROM.

Even so, not every operating system can be booted from a CD. During booting, Windows/98/Me and Windows /2000/XP write to the medium from which they are being booted. This is not possible with a CD and so the process is cancelled and the PC cannot be started. No provision for booting from a ROM medium was made when these operating systems were developed. When booting from a CD therefore, you can only start an operating system that does not write to the medium, such as 'MS-DOS' or 'Linux'.

Bootable CDs are created according to the 'El Torito' standard. The CD contains a boot image and an ISO part. When the read driver for the CD-ROM drive and the 'Mscdex.exe' file have been installed, MS-DOS can access the ISO part of the CD which runs the rest of the installation routine.

3.5.2 Background

Bootable CDs are created using the so-called 'El Torito' specification. This is an extension of the ISO Level 1, ISO Level 2, Joliet standard which controls the structure of Data CDs: A bootable CD consists of a boot partition and an optional ISO track. The format sees a boot section that contains the information needed to start the CD and a boot catalog.

Such a CD can only be made from an existing bootable partition. The entire partition is copied to the CD so the CD must be smaller than 650 MB (or 700 MB).

There are three basic types of Boot CDs: Floppy Emulation, Harddisk Emulation and No Emulation.

- With Floppy Emulation, a bootable floppy is needed to create the bootable CD. The size of the start data is limited by the capacity of the floppy disk (e.g.: 1.44 MB). When starting, the Boot CD is assigned Drive A and the actual disk drive is treated as B.
- Harddisk Emulation requires a bootable hard disk to create the bootable CD. The Boot CD is assigned drive letter C and the existing hard disks are incremented a letter, so C becomes D, D becomes E and so forth. During booting the CD behaves as if it were CD drive C. Up to 640 MB (or 700 MB) of boot data can be stored on a CD with this type of bootable CD. However this requires a harddisk partition with 640 (or 700) MB max. This partition must first be created if it does not yet exist.
- With No Emulation, the drive letters are not changed. This type is used for bootable installation CDs.

3.5.3 Template for making a bootable CD

A 'template' in the form of a bootable drive is needed to make a bootable CD. There are basically three types of bootable CD:

1. **Floppy Emulation**: Floppy Emulation requires a bootable floppy to make the bootable CD. When it is booted, the CD behaves as if the floppy were inserted in Drive A. The drive letters increment, so that Drive A: corresponds to the bootable CD. Floppy disk drive A: can be accessed as B: after booting. The size of the start data is basically limited by the capacity of the floppy disk (e.g.: 1.44 MB).
2. **Harddisk Emulation**: A bootable hard disk is required to create the bootable CD. When booted, the CD behaves as if the CD were Drive C:. Its 'old' Drive C: becomes Drive D:, its old Drive D: becomes Drive E: and so forth. Up to 640MB of boot data can be stored on a CD with this type of bootable CD. Of course this means that the template drive must not be bigger than 640 MB or it will not 'fit' on the CD. So if you have a 200 GB hard disk with only one 200 GB partition for example, you will not be able to create a bootable CD from it without first re-partitioning your hard disk in a suitable way. This is a problem of principle and has nothing to do with **Nero Burning ROM 7**.
3. **No Emulation**: This feature is only intended for use by out-and-out experts who require no floppy or harddisk emulation and wish to install their own device drivers. 'Windows 2000 CD' uses this method, for example.

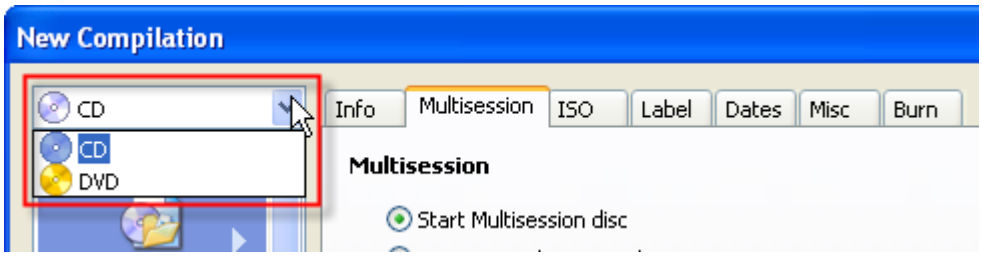
For **Nero Burning ROM 7** the template for making a bootable CD can be either a logical drive (e.g. the C: drive) or a so-called 'Image File' of a drive. Image files contain the contents of a drive sector by sector as a file. Image files can be

created with packages such as 'Norton Disk Editor' or 'WinImage' and are usually very large (as large as the drive from which they were created, obviously!).

3.5.4 Making bootable CDs

You will find basic information about bootable CDs based on the 'El Torito' standard in the section entitled 'Background'; this section only describes how to create a bootable CD with **Nero Burning ROM 7**.

1. Start **Nero Burning ROM 7**.
2. Click on the drop-down list box and select the media type 'CD'.



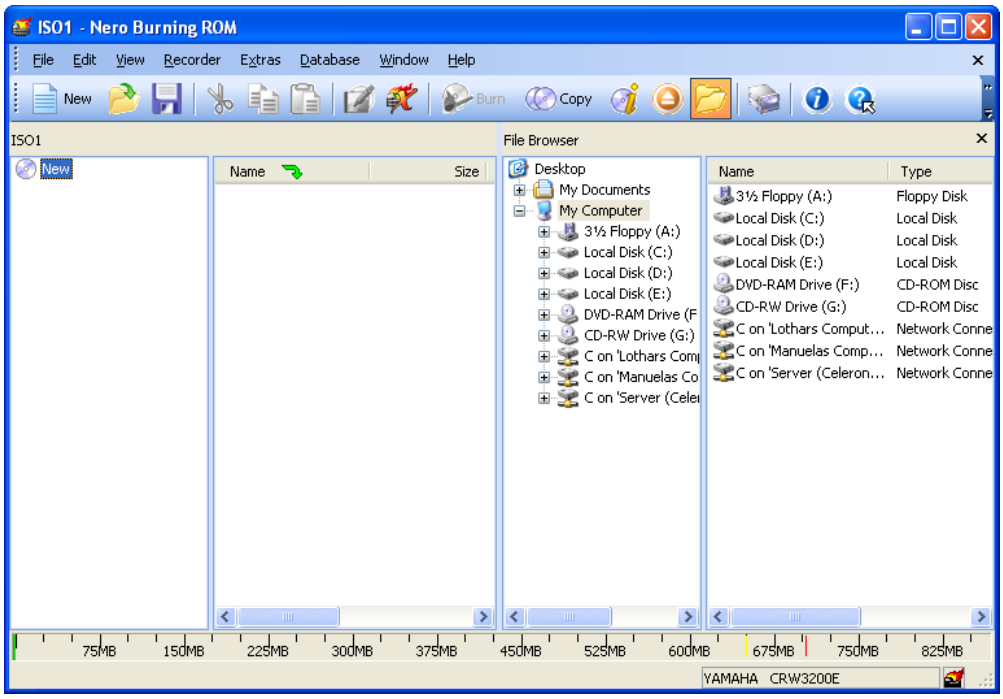
3. Select the 'CD-ROM (Boot)' compilation, thereby bringing the 'Boot' tab to the foreground.
4. In the upper section of the **Boot** tab (Source of boot image data) you can specify whether the template data for the bootable CD originate from a logical drive or a drive image files (refer to 'Template for making a bootable CD').

If your preferred logical drive does not appear on the list of drives on this tab, this is because the drive is bigger than 650 / 700 MB. This amount of data cannot fit on a CD so **Nero Burning ROM 7** does not display these drive in the list.

Please note furthermore that for operating systems as of Windows 2000 you need to have administrator rights in order to be able to access drives 'directly', which you will need to do if you are to create bootable discs. This requirement for direct drive access for operating systems as of Windows 2000 is imposed by Microsoft and is intended to protect against hackers who could otherwise gain access to the confidential data of other users.

5. The lower part of the tab (expert settings) contains detailed settings for 'El Torito' standard compliant bootable CDs. These settings are normally grayed which indicates that **Nero Burning ROM 7** makes the right settings for you automatically. When an image file is entered as the source of the boot image, **Nero Burning ROM 7** cannot make the right settings automatically. If this is the case, or if you want to change the expert settings manually, you can enter all the parameters by hand. Activate the 'Enable expert settings' checkbox if required. You are of course now responsible for the CD working correctly later on.
6. Click on the 'New' button to finish selection of the compilation. The **Nero Burning ROM 7** file browser opens in which you select the files to be burned.
7. Select the desired files on the right-hand side of the file browser and drag them to the left-hand side. Repeat this step until all of the files are in the compilation area of the file browser.

You will find further information on adding data files in the chapter 'Creating a CD-ROM (ISO)'.



8. Click on the 

icon to switch to the burning area. You are then ready to burn the CD. For information on how to do this, please read the chapter 'Burning a disc'.

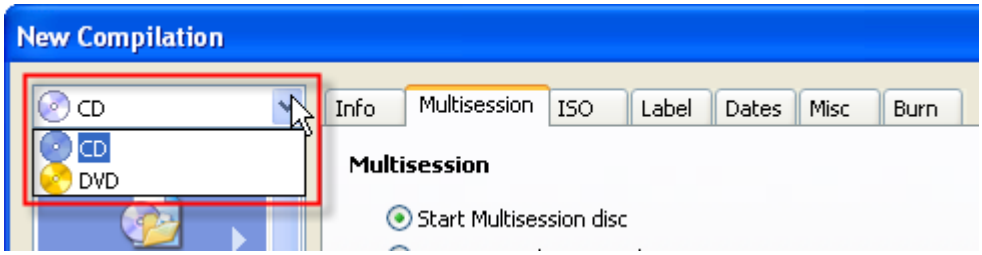
3.6 Video CD/Super Video CD

The program **Nero Vision 4** is most suitable for the creation of Video CDs and Super Video CDs. We therefore recommend that you use this program. If you would nevertheless like to use **Nero Burning ROM 7** to create these discs, please read the next chapter.

3.6.1 Creating a Video CD

You can make Video CDs when the files are already in the MPEG-1 format or when other video formats are converted to it. **Nero Burning ROM 7** contains a built-in MPEG-1 encoder with which MPEG-1 files can be created.

1. Starten Sie **Nero Burning ROM 7**.
2. Click on the drop-down list box and select the media type 'CD'.

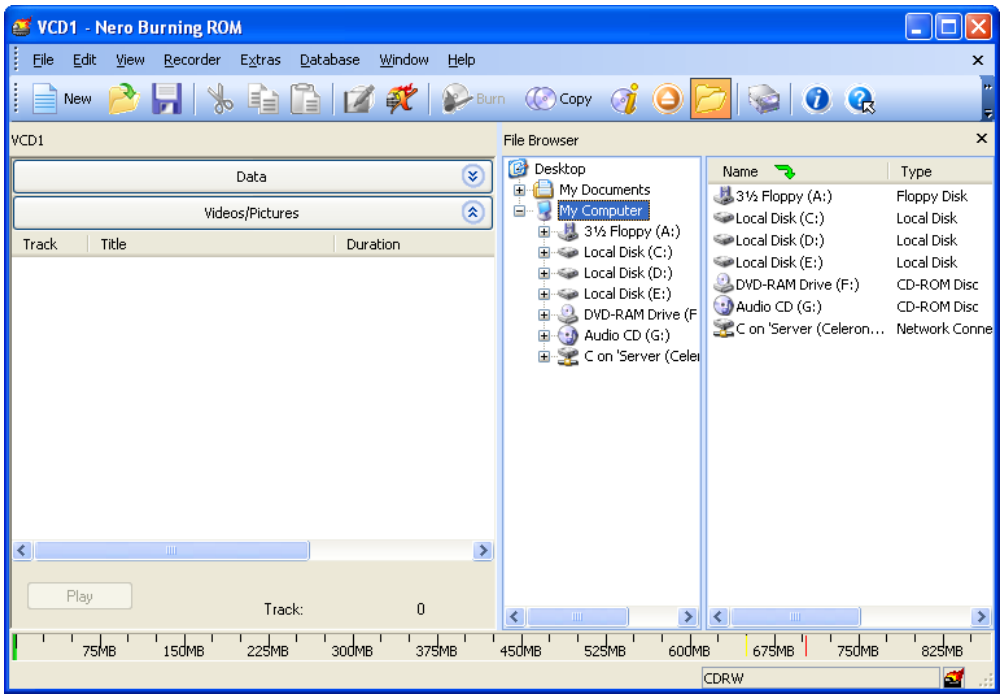


3. Select the 'Video CD' compilation, thereby bringing the 'Video CD' tab to the foreground. The 'Video CD' tab offers a number of options which you can use to tailor the Video CD to your specific requirements. The 'Create standard compliant CD' checkbox should be enabled to ensure that you make a Super Video CD that can be played in a DVD player. You specify the color format to which the video files will be converted in the 'Encoding resolution‘ section: Pal or NTSC. If you want to be able to add pictures to the video, then they can be copied to a separate directory. In this case check the ‘Store source pictures in’ checkbox. The 'Use CD-i application' checkbox is only intended for users with experience of CD-i applications.
4. Click on the 'New' button to finish selection of the compilation. The **Nero Burning ROM 7** file browser opens in which you select the files to be burned.
5. The file browser contains one compilation area for video and picture files and one for data files. Click on the 'Data' button if you would like to insert files. These may be text files or even a software player for your PC. Select the desired files on the right-hand side of the file browser and drag them to the left-hand side. Repeat this step until all of the files are in the compilation area of the file browser.

You will find additional information on adding audio files in the chapter 'Creating an audio CD'.

6. Click on the 'Video/Pictures' button to insert video and picture files. Select the desired files on the right-hand side of the file browser and drag them to the left-hand side.
   Repeat this step until all of the files are in the compilation area of the file browser.

If an MPEG file does not have the correct characteristics of a VCD, **Nero Burning ROM 7** detects the incorrect format and the user has three options: 'Ignore Compatibility', 'Re-Encode the File' or 'Cancel'.
Ignoring compatibility burns the file to the CD with no changes. This option is specifically aimed at experienced users.
Re-encoding decodes the existing file, converts it to the correct resolution and Framerate and encodes it again. (Re-encoding is done before burning. This process requires both time and temporary memory space.
Canceling interrupts the addition of the video file, i.e. it is not added to the compilation.



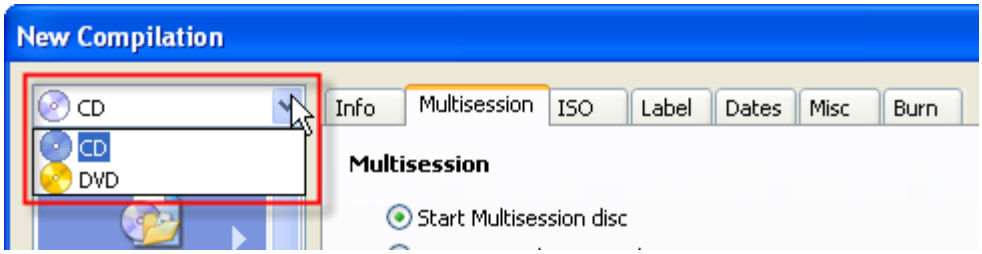
7. Click on the 

icon to switch to the burning area. You are then ready to burn the CD. For information on how to do this, please read the chapter 'Burning a disc'.

3.6.2 Creating a Super Video CD

You can make Super Video CDs when the files are already in the MPEG-2 format or when other video formats are converted to it. The DVD-Video plug-in is required for decoding and encoding in 'MPEG-2' format. This plug-in is included in the retail version and the web version. If you own another version of **Nero Burning ROM 7**, you can purchase the DVD-Video plug-in on the **Nero AG** website (http://www.nero.com/).

1. Start **Nero Burning ROM 7**.
2. Click on the drop-down list box and select the media type 'CD'.



3. Select the 'Video CD' compilation, thereby bringing the 'Video CD' tab to the foreground. The 'Super Video CD' tab offers a number of options which you can use to tailor the Video CD to your specific requirements. The 'Create standard compliant CD' checkbox should be enabled to ensure that you make a Super Video CD that can be played in a DVD player. You specify the color format to which the video files will be converted in the 'Encoding resolution'

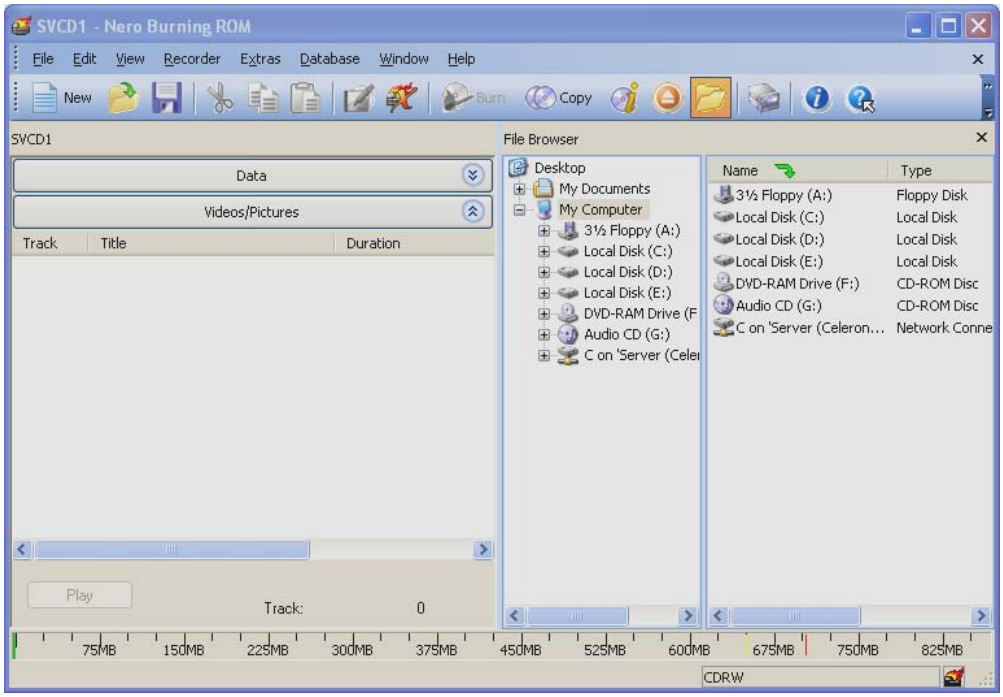
section: Pal or NTSC. If you want to be able to add pictures to the video, then they can be copied to a separate directory. In this case check the ‘Store source pictures in’ checkbox. The 'Use CD-i application' checkbox is only intended for users with experience of CD-i applications.

4. Click on the 'New' button to finish selection of the compilation. The **Nero Burning ROM 7** file browser opens in which you select the files to be burned.
5. The file browser contains one compilation area for video and picture files and one for data files. Click on the 'Data' button if you would like to insert files. These may be text files or even a software player for your PC. Select the desired files on the right-hand side of the file browser and drag them to the left-hand side. Repeat this step until all of the files are in the compilation area of the file browser.

You will find further information on adding data files in the chapter 'Creating a CD-ROM (ISO)'.

6. Click on the 'Video/Pictures' button to insert video and picture files. Select the desired files on the right-hand side of the file browser and drag them to the left-hand side.
   Repeat this step until all of the files are in the compilation area of the file browser.

If an MPEG file does not have the correct characteristics of a SVCD, **Nero Burning ROM 7** detects the incorrect format and the user has three options: 'Ignore Compatibility', 'Re-Encode the File' or 'Cancel'.
Ignoring compatibility burns the file to the CD with no changes. This option is specifically aimed at experienced users.
Re-encoding decodes the existing file, converts it to the correct resolution and Framerate and encodes it again. (Re-encoding is done before burning. This process requires both time and temporary memory space.
Canceling interrupts the addition of the video file, i.e. it is not added to the compilation.



7. Click on the 

icon to switch to the burning area. You are then ready to burn the CD. For information on how to do this, please read the chapter 'Burning a disc'.

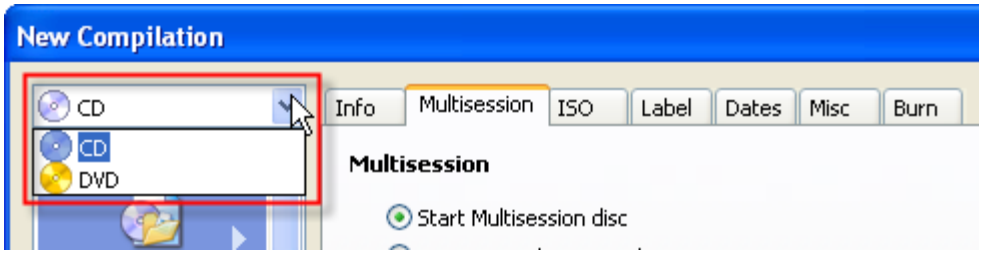
3.7 miniDVD

With **Nero Burning ROM 7** you can burn a miniDVD if the DVD-Video title is already available. If, on the other hand, you would like to convert video files into a DVD-Video title, you can use **Nero Vision 4** but not **Nero Burning ROM 7**.

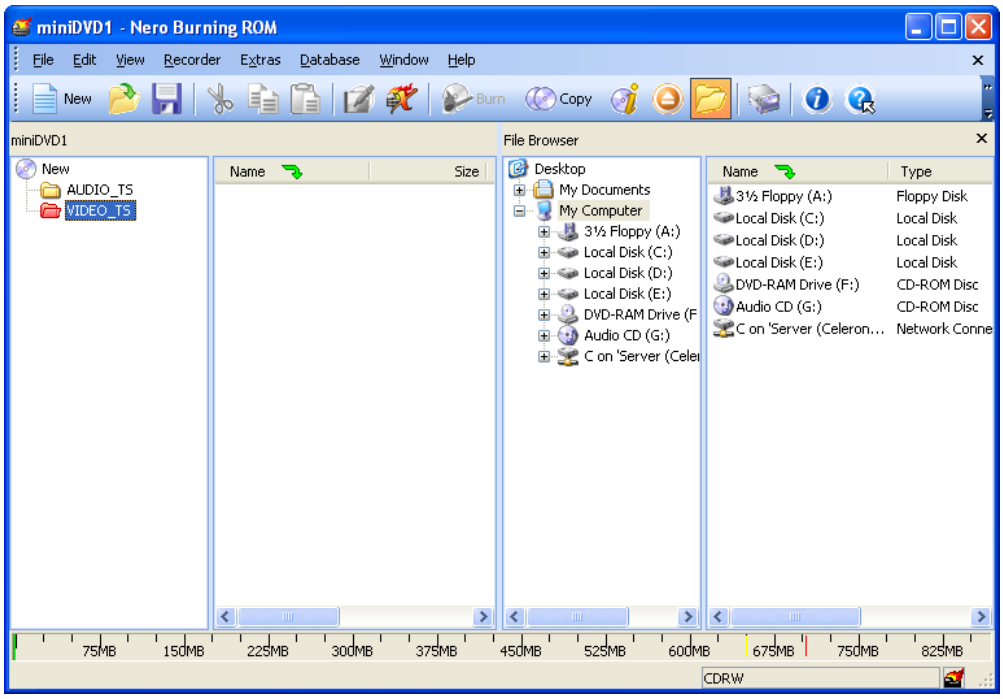
3.7.1 miniDVD erstellen

In principal a miniDVD is the same as a CD-R or CD-RW written in UDF format with a DVD structure. It offers the same technical options and qualities as a DVD, can create chapters or animated menus and support subtitles and multiple audio tracks (including real digital multichannel sound). While compatibility with all DVD players is not guaranteed, miniDVDs can be played by computers without any problem.

1. Start **Nero Burning ROM 7**.
2. Click on the drop-down list box and select the media type 'CD'.



3. Select the 'miniDVD' compilation, thereby bringing the 'ISO' tab to the foreground.
4. Click on the 'New' button to finish selection of the compilation. The **Nero Burning ROM 7** file browser opens in which you select the files to be burned.
5. Select all available files of the DVD-Video title on the right-hand side of the file browser and drag them to the left-hand side.



6. Click on the 

icon to switch to the burning area. You are then ready to burn the CD. For information on how to do this, please read the chapter 'Burning a disc'.

3.8 Hybrid CDs

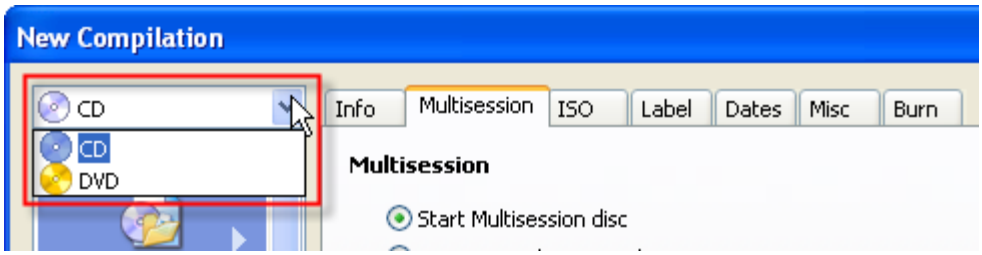
A hybrid CD contains both files for PCs and Apple Macintosh computers according to the HFS standard. **Nero Burning ROM 7** creates so-called 'non shared' Hybrid CDs. This means that if you wish to use files on the Mac and on a PC then they must be on the CD twice: Once in the ISO sector and once in the HFS sector.

3.8.1 Creating a Hybrid CD

If you want to make a Hybrid CD from a PC, the HFS input data must be on an SCSI harddisk connected to the PC. Remember however that the data on the SCSI harddisk can only be created with an Apple Mac computer. An SCSI harddisk with the HFS input data must be connected up to the PC before a Hybrid CD can be created. The SCSI harddisk must be connected and powered up before the PC is switched on. There must also be no duplication of SCSI device numbers.

Caution: Neither the ISO data nor the HFS data nor both data together may exceed 640 MB as they will not fit on the CD.

1. Start **Nero Burning ROM 7**.
2. Click on the drop-down list box and select the media type 'CD'.



3. Select the 'CD-ROM (Hybrid)' compilation, thereby bringing the 'Hybrid' tab to the foreground. Select the HFS partition from which you wish to add the data. If you do not see a HFS partition, it means that no SCSI hard drive containing HFS was found.
4. Click on the 'New' button to finish selection of the compilation. The **Nero Burning ROM 7** file browser opens in which you select the files to be burned.
5. Select the desired files for the PC on the right-hand side of the file browser and drag them to the ISO part of the hybrid CD on the left-hand side.
6. Select the desired files for the PC on the right-hand side of the file browser and drag them to the HFS part of the hybrid CD on the left-hand side.
7. Click on the 

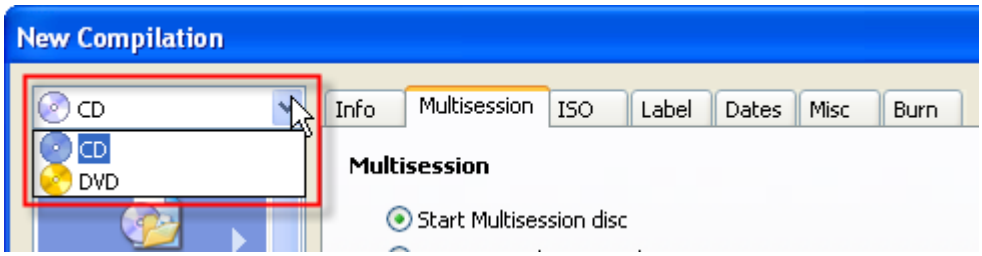
icon to switch to the burning area. You are then ready to burn the CD. For information on how to do this, please read the chapter 'Burning a disc'.

3.9 CD-ROM (UDF)

The UDF file system was developed when it became increasingly obvious that the ISO9660 file system used on CDs was no longer meeting the needs of rewritable media and DVDs. It was optimized mainly to accommodate large data volumes and to make it easy to modify an existing file system.

3.9.1 Creating a CD-ROM (UDF)

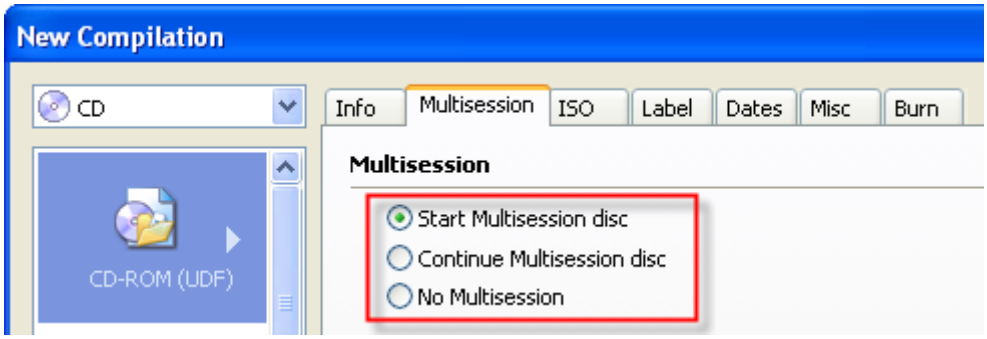
1. Start **Nero Burning ROM 7**.
2. Click on the drop-down list box and select the media type 'CD'.



3. Select the 'CD-ROM (UDF)' compilation, thereby bringing the 'Multisession' tab to the foreground. Select the desired multisession option.
   Start Multisession disc: A multisession disc will be started, i.e. you create the first session and can burn further sessions later once the first session has been burned. All of the burned sessions are visible later in the drive and you can access all of the data.
   Continue Multisession disc: A further session will be burned onto a disc

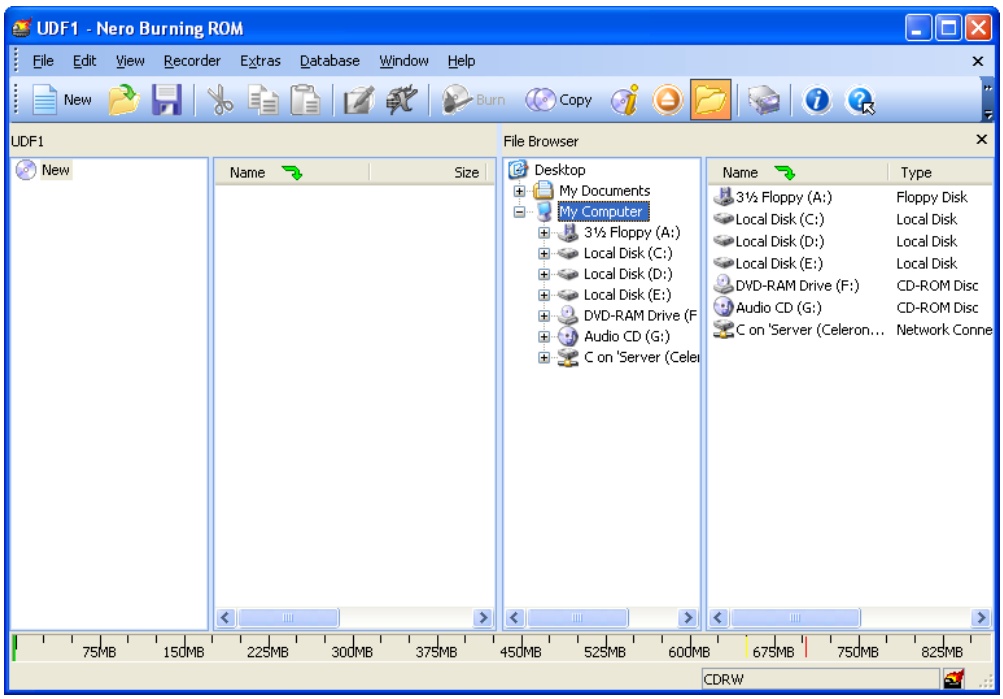
already burned with at least one session. All of the burned sessions are visible later in the drive and you can access all of the data. If you select this option, there must be a multisession disc in the recorder.

No Multisession: A multisession disc will not be created. This option still enables the disc to be written until it is full. Note, however, that only the last session will be visible then and you will only have access to the data from this last session.



You will find additional information on the multisession options in the chapter 'Background information for advanced users'.

4. For advanced users: If you click on the 'UDF' tab you can select the UDF partition type and the UDF file system. If you wish to create a disc that is compatible with Xbox ™, check the appropriate box.
5. Click on the 'New' button to finish selection of the compilation. The **Nero Burning ROM 7** file browser opens in which you select the files to be burned.
6. Select the desired files on the right-hand side of the file browser and drag them to the left-hand side. Repeat this step until all of the files are in the compilation area of the file browser.



7. Click on the 

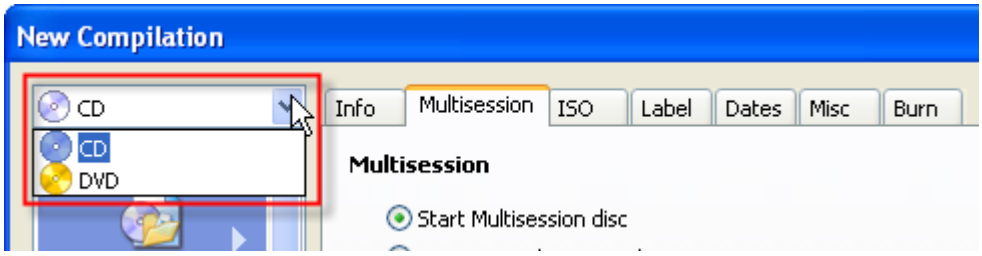
icon to switch to the burning area. You are then ready to burn the CD. For information on how to do this, please read the chapter 'Burning a disc'.

3.10 CD-ROM (UDF/ISO)

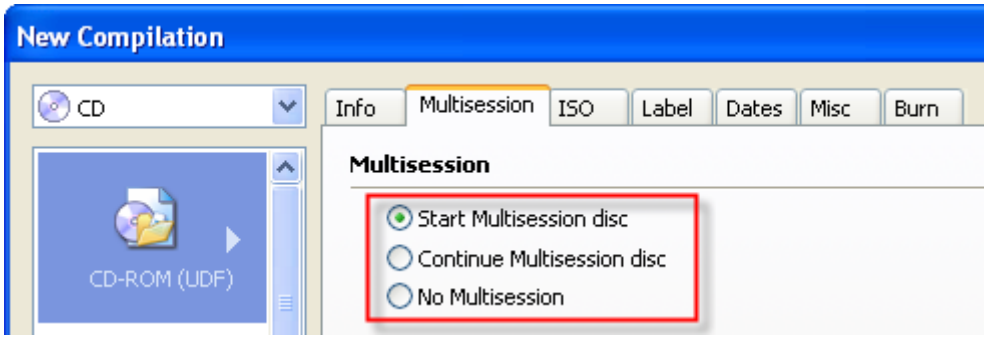
3.10.1 Creating a CD-ROM (UDF/ISO)

The big advantage of a UDF/ISO Bridge CD is that the data comply with both the UDF standard and the ISO standard. The data are only added to the compilation once and **Nero** automatically creates a UDF and an ISO table of contents. These two tables of contents allow the CD to be used as a Bridge CD.

1. Start **Nero Burning ROM 7**.
2. Click on the drop-down list box and select the media type 'CD'.

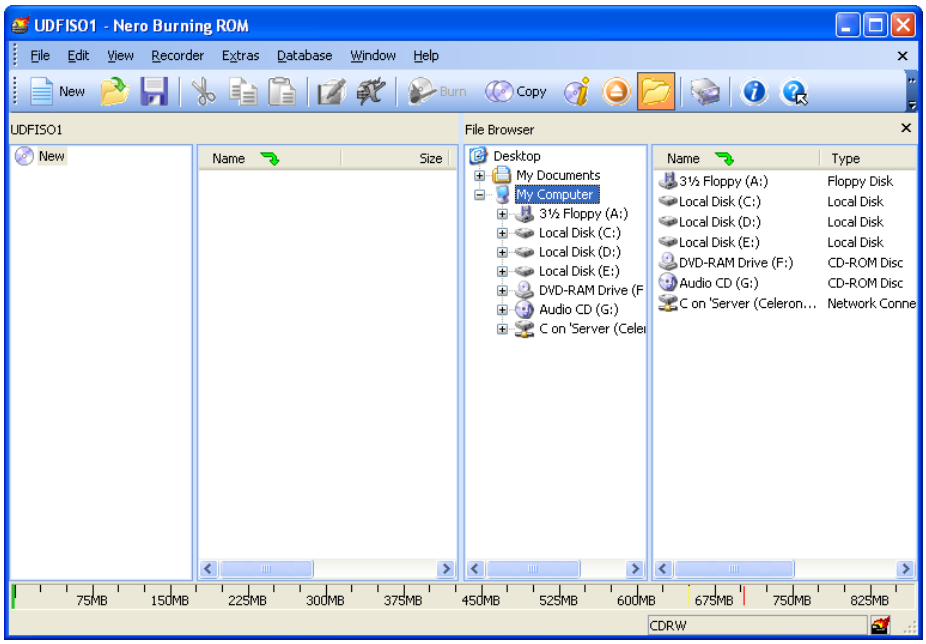


3. Select the 'CD-ROM (UDF/ISO)' compilation, thereby bringing the 'Multisession' tab to the foreground. Select the desired multisession option.
   Start Multisession disc: A multisession disc will be started, i.e. you create the first session and can burn further sessions later once the first session has been burned. All of the burned sessions are visible later in the drive and you can access all of the data.
   Continue Multisession disc: A further session will be burned onto a disc already burned with at least one session. All of the burned sessions are visible later in the drive and you can access all of the data. If you select this option, there must be a multisession disc in the recorder.
   No Multisession: A multisession disc will not be created. This option still enables the disc to be written until it is full. Note, however, that only the last session will be visible then and you will only have access to the data from this last session.



You will find additional information on the multisession options in the chapter 'Background information for advanced users'.

4. For advanced users: If you click on the 'UDF' tab you can select the UDF partition type and the UDF file system. If you wish to create a disc that is compatible with Xbox ™, check the appropriate box.
5. Click on the 'New' button to finish selection of the compilation. The **Nero Burning ROM 7** file browser opens in which you select the files to be burned.
6. Select the desired files on the right-hand side of the file browser and drag them to the left-hand side. Repeat this step until all of the files are in the compilation area of the file browser.



7. Click on the 

icon to switch to the burning area. You are then ready to burn the CD. For information on how to do this, please read the chapter 'Burning a disc'.

4 Copying a CD

4.1 Direct copy or copy of an image file?

Copying CDs is easy with **Nero Burning ROM 7**. All you have to do is decide how you would like to copy the CD:

- Fast copy (on the fly) from CD/DVD-ROM drive to recorder.
- Create the copy with the help of a temporary image file on the hard disk. We recommend that you read in the original CD using the recorder.

The method you use for copying will depend on your particular requirements: we do not recommend either method a priori as they both have advantages and disadvantages.

Choose copy over image if you

- Feel that obtaining the best possible reproduction (particularly regarding audio index positions and general audio quality) of the original CD is important.
- Have the extra time needed to produce a copy using an image file.
- Have sufficient space for the image file on the hard disk.
- Would like to make several copies of the same CD.
- Think it likely that read errors may have occurred on the source CD (for example because scratches are clearly visible).
- You only have a CD drive.

Choose fast copy if you

- Do not have much time to spare.
- Do not have enough space for an image file on the hard disk (for example you will need about 10 MB per minute of audio data; on the other hand a data disk requires a large image file of several hundred GBs!).

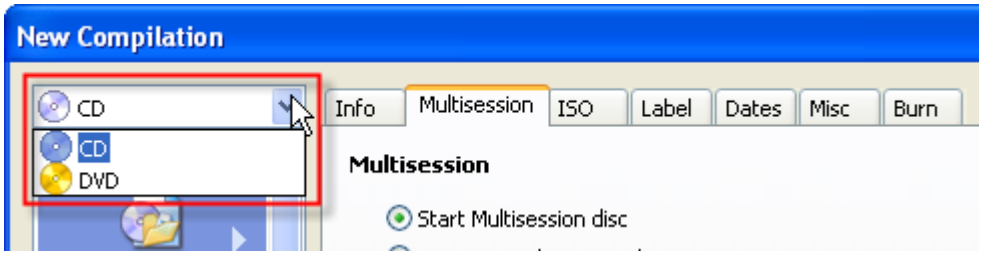
4.2 Copying using an image file

There are three stages to copying using an image file. First of all **Nero Burning ROM 7** reads the original CD from a CD drive and then, in the second stage, produces an image file on the hard disk containing all the information from the CD. In the third stage **Nero Burning ROM 7** writes the image file already created onto an empty CD.

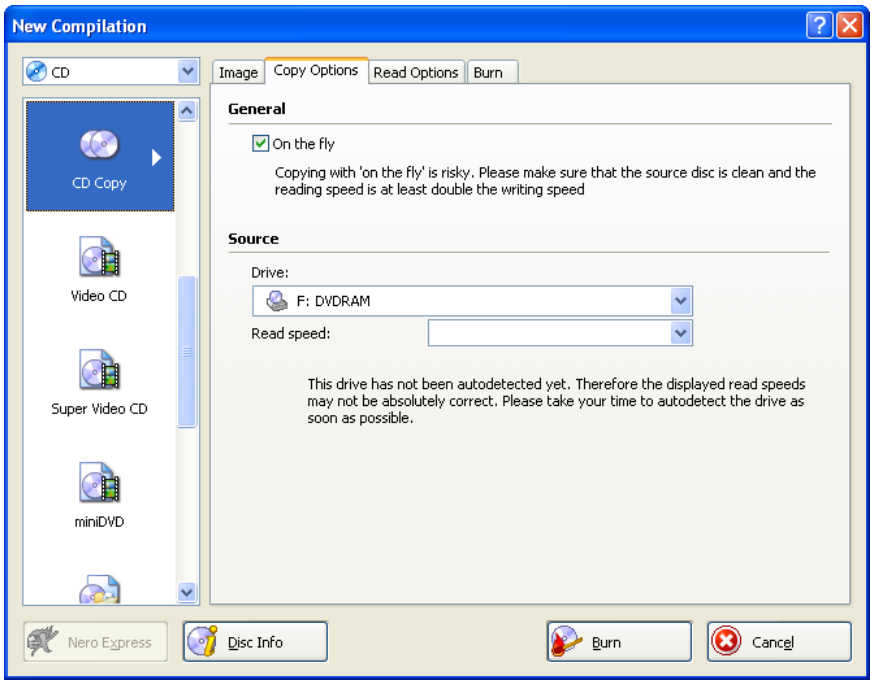
This procedure guarantees the greatest possible insurance against data being supplied too slowly which could lead to defective blanks. With audio CDs this choice allows audio data to be corrected - something which would not be possible with simultaneous reading and burning.

A copy over image may consist of up to 8000 MBs so you should ensure that you have enough storage space on the hard disk selected. We also recommend that you save the copy over image on the fastest hard disk. If you click on the appropriate button **Nero** will automatically carry out a speed test of all your hard disks and provide you with the result.

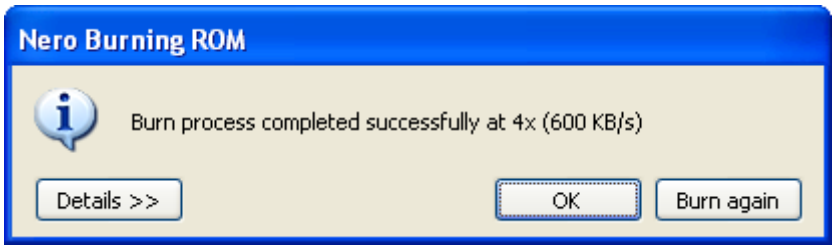
1. Start **Nero Burning ROM 7**.
2. Click on the drop-down list box and select the media type 'CD'.



3. Select the 'CD Copy' compilation.
4. Click on the 'Copy Options' tab and deactivate the 'On the fly' check box. Click on the drop-down list box and select the desired drive. We recommend that you read in the original CD using the recorder.



5. Click on the ‘Burn’ button to create the image file. The burn window will appear and you can track the progress.
6. The disc will be ejected once the image file has been created. Insert an empty disc in the drive and close the tray. The disc will then be burned and you can track the progress in the burn window. The outcome of the burn process is displayed once it is finished. Click on 'OK' to finish or on 'Burn again' if the compilation should be burned again.



4.3 Copying using a fast copy (on the fly)

Nero can perform a fast copy (on the fly) straight from the CD-ROM to the recorder without using an "intermediate" image file.

Some of the disadvantages in the following list do not apply to recorders with buffer underrun (buffer in idle state) protection.

Advantage

This feature, which is often desirable, allows faster copying and also requires no additional storage space on the hard disk.

Disadvantage

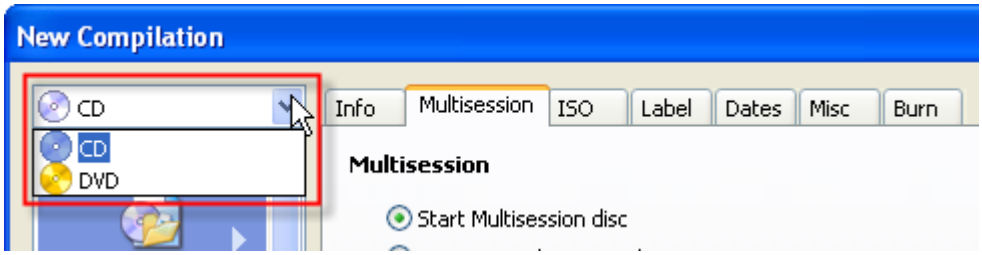
The advantage of speed may also become a disadvantage:

- Firstly there must be a CD/DVD-ROM drive available which can supply data fast enough. For example if you want to burn 24x the input data must be able to be read in at least 24x (better with 32x) from the CD/DVD-ROM so that no buffer underrun occurs. It is not so easy to guarantee this because some CD-ROM audio data reads considerably more slowly than "normal" data (Mode 1 or Mode 2). For example there are modern 48x CD ROM drives which read audio data slower than 10x!
- If errors occur when reading the CD - because there is a scratch on the CD for example - the error cannot possibly be eliminated by reading the appropriate point of the CD several times because, unlike the image file approach, there is no time (threat of buffer underrun). In such a situation there is nothing else **Nero Burning ROM 7** can do but write the questionable data received or just null data. In other words direct copies are very susceptible to read errors!
- Many CD/DVD-ROM drives are unable to provide information about the number and type of sessions. They can only give information on the number and type of tracks. This means that **Nero Burning ROM 7** sometimes cannot prepare an exact copy of a CD.
- Audio tracks may contain index positions. However these can only be identified if the appropriate point on the CD is being read. When producing a "disc-at-once" copy this information does have to be available before the burn process is begun. This means that with fast copies **Nero Burning ROM 7** cannot copy audio index positions at the same time. These will therefore inevitably be lost!
- The quality of audio data read in may suffer here. **Nero Burning ROM 7**'s method of copying a CD is such that some megabytes of data are read from the CD/DVD-ROM and then written onto the recorder. This inevitably occurs because **Nero Burning ROM 7** does not have enough main memory to record

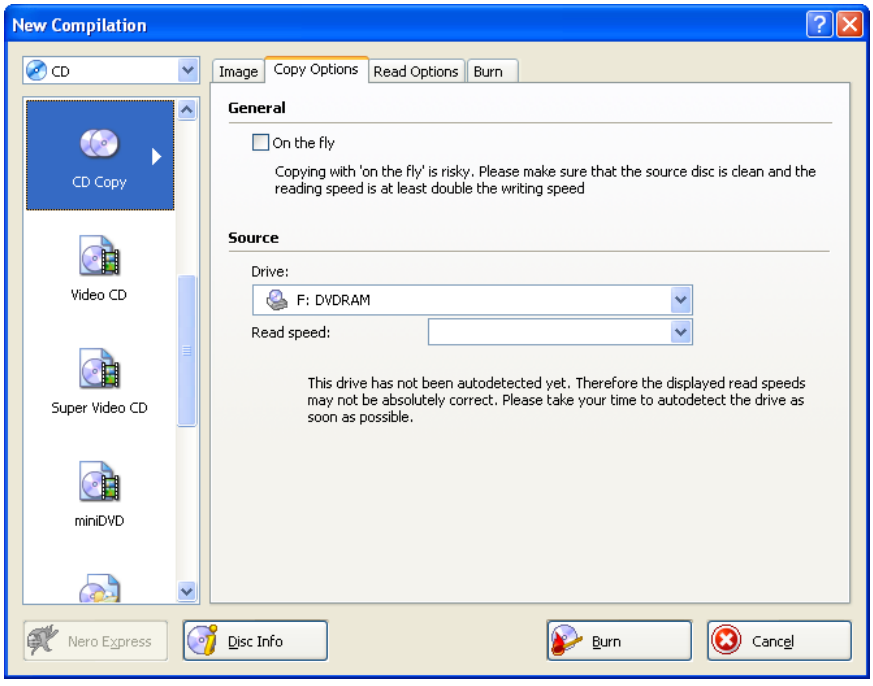
the entire CD (sometimes more than 700 MB!) and no image file is to be made (even a fast copy (on the fly)). The CD/DVD-ROM drive often reads at higher speed than that at which the recorder can write the data. This means it is possible for **Nero Burning ROM 7**'s internal buffer to be unable to accept any more data. This can lead to a situation where the CD/DVD-ROM drive has already read audio data in its internal buffer (cache) but has not yet been able to "deliver" to **Nero Burning ROM 7** because **Nero Burning ROM 7**'s buffer is full. This means that the CD/DVD-ROM is forced to reposition the reading head. As the CD is turning continuously in the CD-ROM/DVD drive, the reading head has to jump back to a previous position. Many CD/DVD-ROM drives cannot adjust the reading head for audio CDs accurately and therefore sometimes invalid audio data is transmitted.

Direct copying of discs requires at least one drive for reading and one for writing.

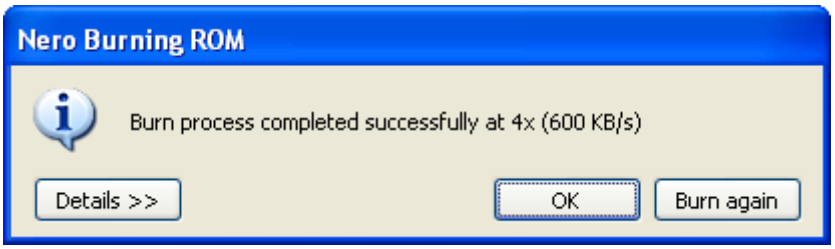
1. Start **Nero Burning ROM 7**.
2. If you have installed a recorder that can burn a number of media types (e.g. CDs, DVDs), then click on the drop-down list box and select the media type to be copied.



3. Select the 'CD Copy' compilation.
4. Click on the 'Copy Options' tab and deactivate the 'On the fly' check box. Click on the drop-down list box and select the desired drive.



5. Insert an empty disc in the drive, close the tray and click on the 'Burn' button to burn the copy. The burn window will appear and you can track the progress. The outcome of the burn process is displayed once it is finished. Click on 'OK' to finish or on 'Burn again' if the compilation should be burned again.

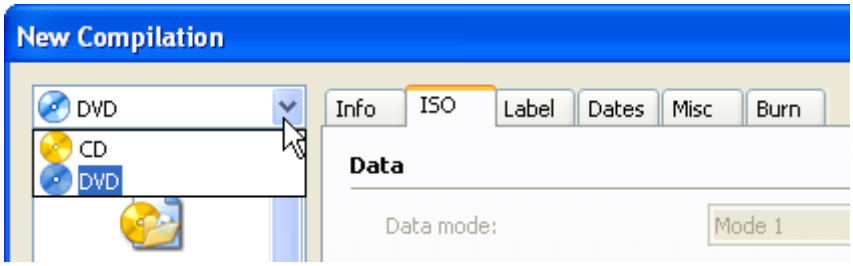


5 DVD erstellen

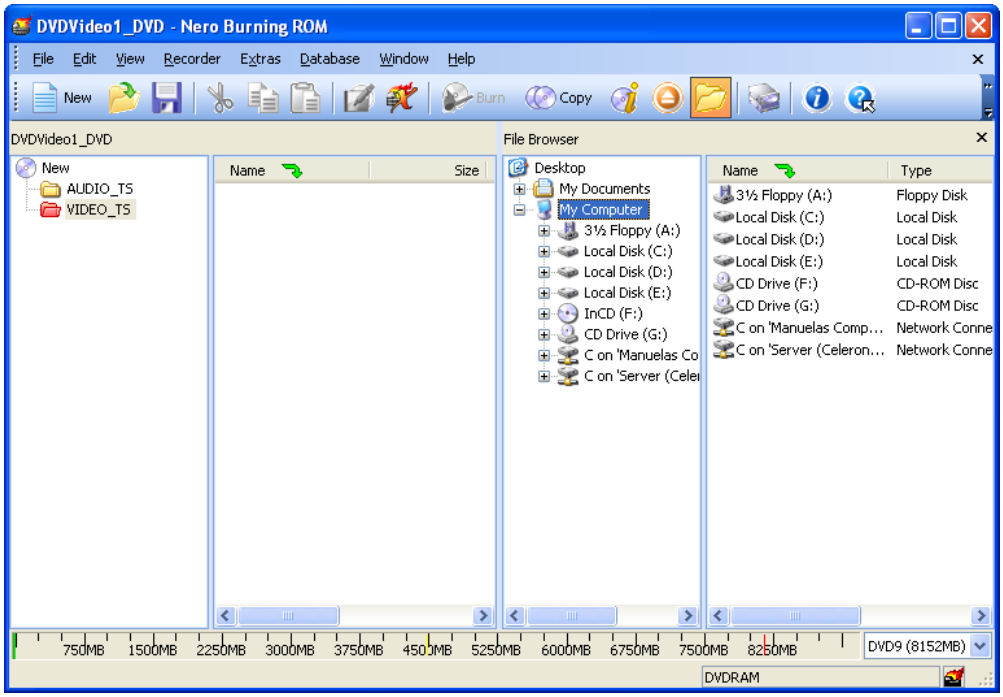
5.1 DVD-Video erstellen

With **Nero Burning ROM 7** you can burn a DVD if the DVD-Video title is already available. If, on the other hand, you would like to convert video files into a DVD-Video title, you can use **Nero Vision 4** but not **Nero Burning ROM 7**.

1. Start **Nero Burning ROM 7**.
2. Click on the drop-down list box and select the 'DVD' media type.



3. Select the 'DVD-Video' compilation, thereby bringing the 'ISO' tab to the foreground.
4. Click on the 'New' button to finish selection of the compilation. The **Nero Burning ROM 7** file browser opens in which you select the files to be burned.
5. Select all available files of the DVD-Video title on the right-hand side of the file browser and drag them to the left-hand side.



6. Click on the 

icon to switch to the burn area. You are then ready to burn the DVD. For more information on how to do this, please read the chapter 'Burning a disc'.

5.2 Creating a DVD-ROM (ISO)

The only difference between creating a DVD-ROM (ISO) and creating a CD-ROM (ISO) is that you select the 'DVD' media type instead of 'CD'. All other points are identical and are therefore not explained here again. Please read the chapter 'Creating a CD-ROM (ISO)'.

5.3 Creating a bootable DVD-ROM

The only difference between creating a bootable DVD-ROM and creating a bootable CD-ROM is that you select the 'DVD' media type instead of 'CD'. All other points are identical and are therefore not explained here again. Please read the chapter 'Making bootable CDs'.

5.4 Creating a DVD-ROM (UDF)

The only difference between creating a DVD-ROM (UDF) and creating a CD-ROM (UDF) is that you select the 'DVD' media type instead of 'CD'. All other points are identical and are therefore not explained here again. Please read the chapter 'Creating a CD-ROM (UDF)'.

5.5 Creating a DVD-ROM (UDF/ISO)

The only difference between creating a DVD-ROM (UDF/ISO) and creating a CD-ROM (UDF/ISO) is that you select the 'DVD' media type instead of 'CD'. All other points are identical and are therefore not explained here again. Please read the chapter 'Creating a CD-ROM (UDF/ISO)'.

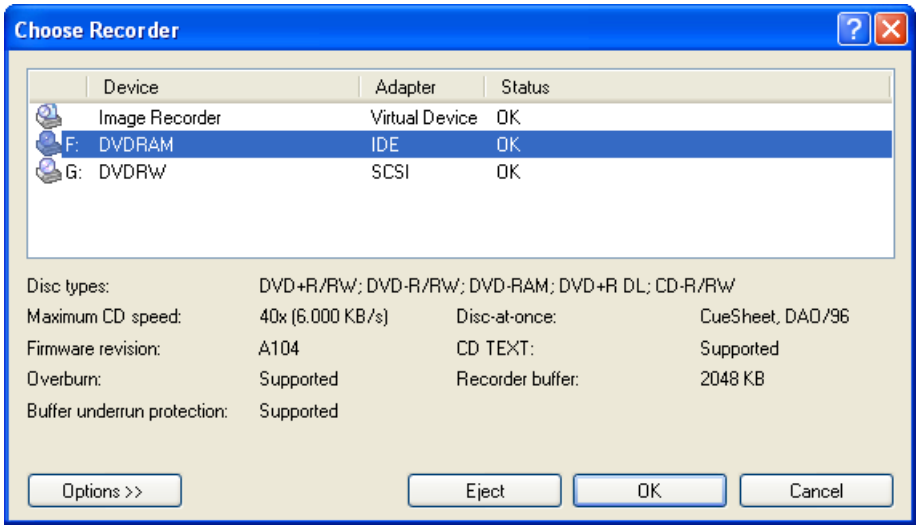
5.6 Copying a DVD

The only difference between copying a DVD and copying a CD is that you select the 'DVD' media type instead of 'CD'. All other points are identical and are therefore not explained here again. Please read the chapter 'Copying a CD'.

6 About burning

6.1 Choose Recorder

Clicking on the  icon opens the dialog that shows the installed recorder and in which the recorder to be used for burning is selected. Even if there is no recorder installed, following installation of **Nero Burning ROM 7** the recorder dialog will show at least one recorder, namely the 'Image Recorder' with which you can save a compilation to your hard drive as an image file. You can subsequently burn this image file using **Nero Burning ROM 7** or view it using **Nero ImageDrive**. When you select a recorder, important and useful information will be displayed such as the media types to be burned, the firmware, etc.



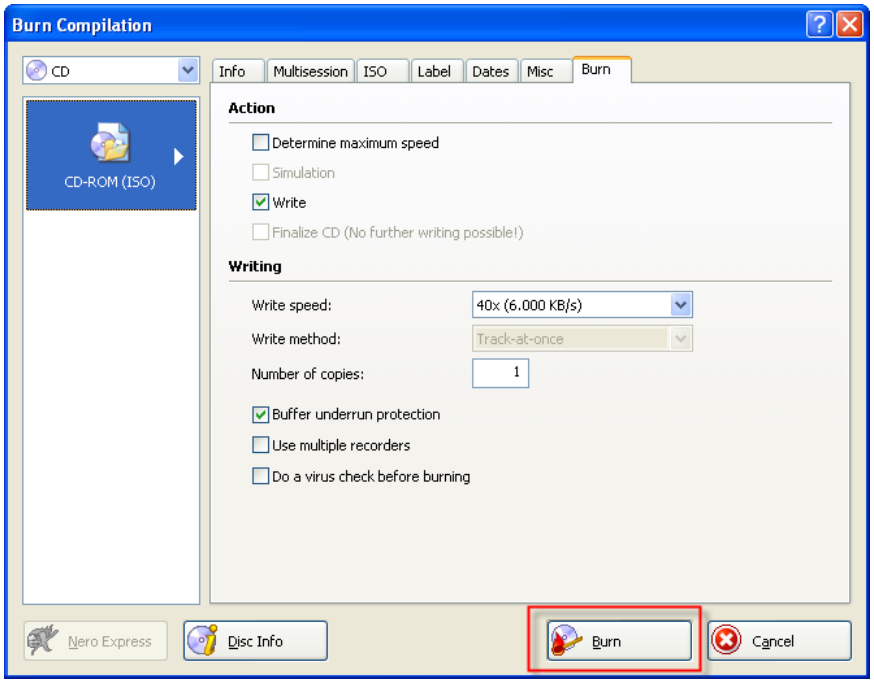
Clicking on the 'Options' button opens the additional 'Preferences' area. The contents of this area depend on the recorder selected. This area is of particular importance in the case of DVD recorders if the book type setting is to be changed when burning DVDs.

6.2 Burning a disc

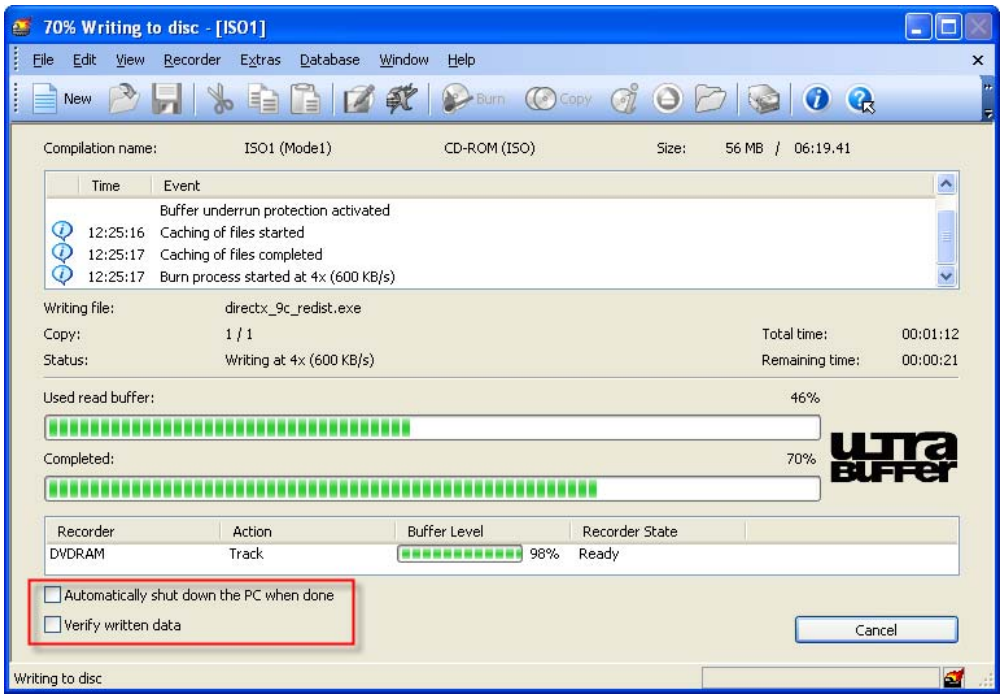
If you have completed your compilation and clicked on the 

icon or if you have made your copying settings, you will be on the 'Burn' tab where you can make your final settings and start the burn process. **Nero Burning ROM 7** will automatically set the burn options to the optimum value so that you do not have to do anything other than click on the 'Burn' button.

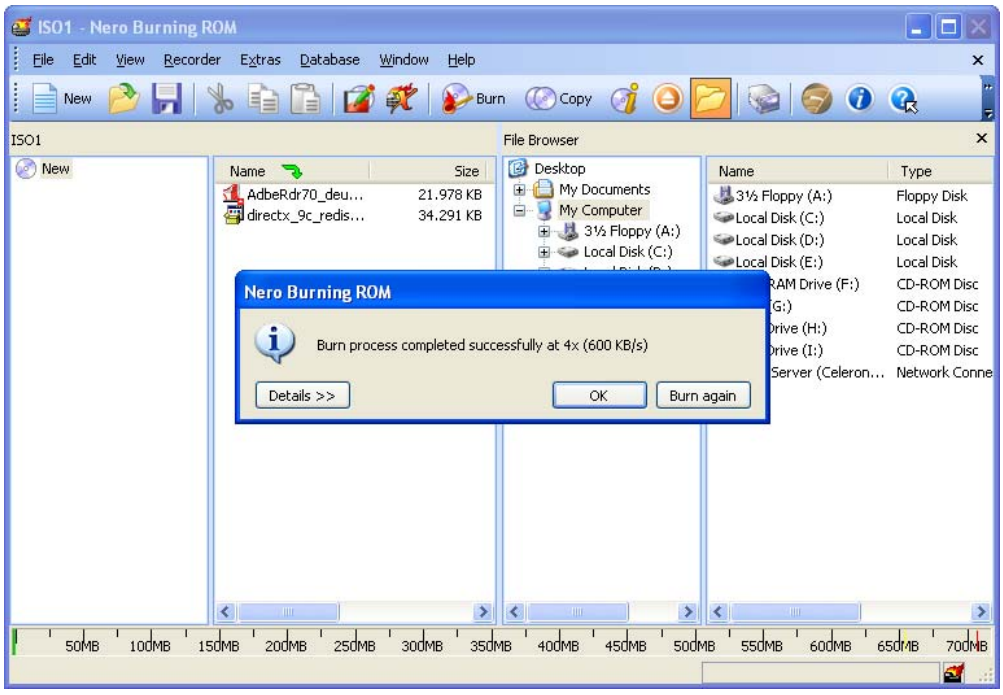
1. Check the options selected in the 'Action' area and change them if necessary.
2. Check the options selected in the 'Writing' area and change them if necessary.
3. Insert a disc and click on the 'Burn' button.



4. The burn process is started; while it is running you can specify whether the files burned onto the disc should be verified and/or the PC shut down after the burn process (provided this is technically possible and you have the administrator rights required for this).

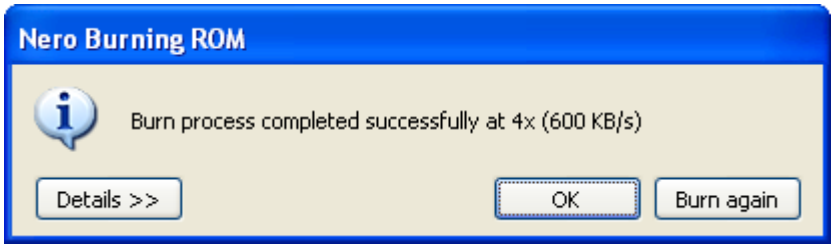


5. The outcome of the burn process is displayed once it is finished. Click on 'OK' to finish or on 'Burn again' if the compilation should be burned again.

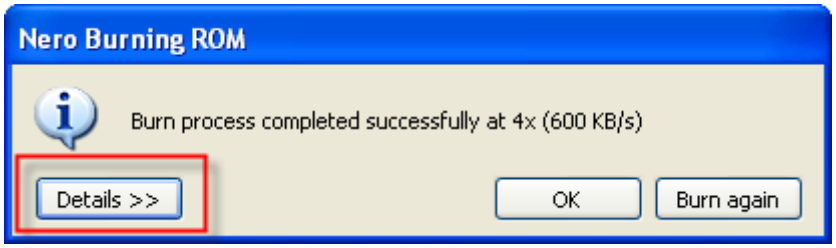


6.2.1 Viewing a log file

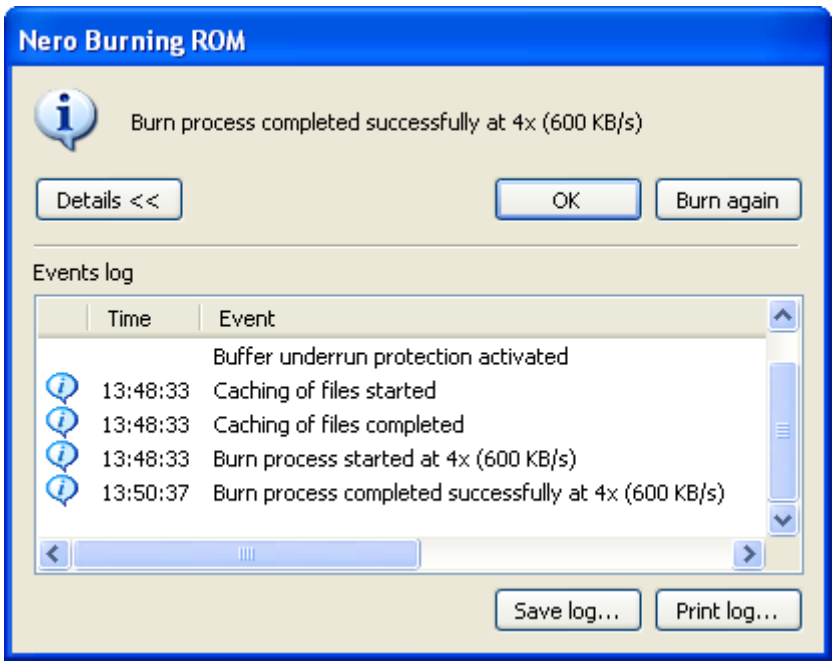
After the burn process you can view the burn log and print or save it.



1. Click on the 'Details' button to display the burn log.



2. Read through the burn log. You can also save and/or print the log if you wish. To do so, click on the appropriate button and enter a name to save the log file or select the desired printer to print it.

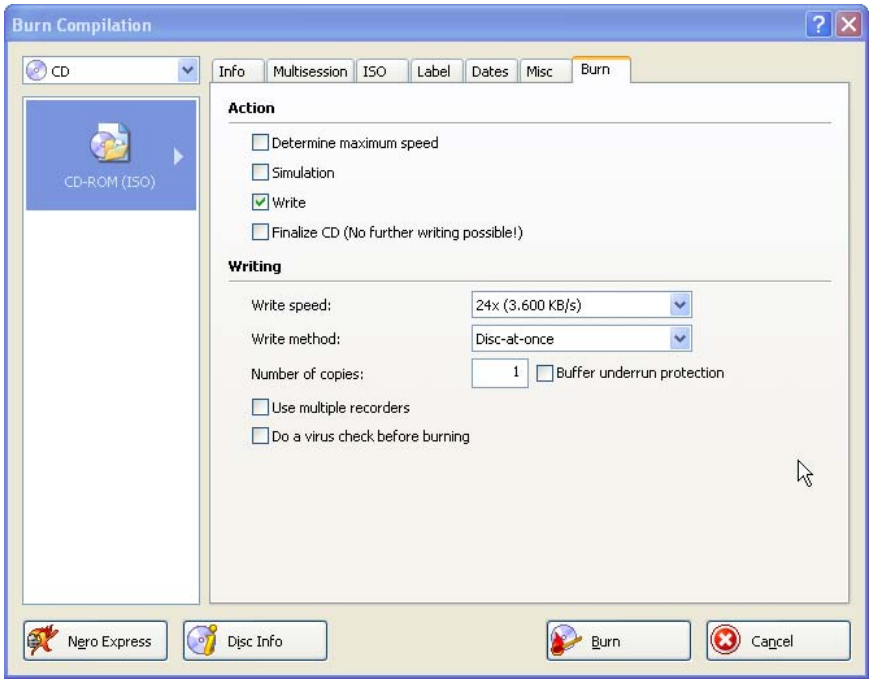


3. Click on the ‘OK’ button to close the window.

6.3 Additional information for advanced users

6.3.1 The Burn tab

On the 'Burn' tab you can make all of the settings required for the burn process.



Determine maximum speed

The speed test determines how quickly the compiled files can be accessed. If the access speed is slower than the burning speed, the burning speed is reduced so as to avoid a buffer underrun.

It is not necessary to run the speed test when using recorders with buffer underrun protection.

Simulation

The simulation runs all the steps involved in burning a medium apart from activating the laser beam, so that you can assume that if the simulation is successful, the burning process will also be successful.

We recommend running a simulation if you are decompressing data before burning, e.g. when burning an audio CD from MP3 files. To play MP3 files on a CD player, the files have to be converted to the corresponding format (CDA). In **Nero Burning ROM 7**, this decompression takes place during the burning process. It takes up computer time, which can result in a buffer underrun on older systems. Pentium 3 systems or higher can decompress data and burn at high speeds simultaneously.

You do not need to run simulations if you are using a recorder with buffer underrun protection.

Write

This checkbox starts the actual physical burning process. If this is interrupted, the result will be faulty and the entire medium may become unusable, depending on the type of medium. Only recorders with buffer underrun protection can continue to burn in such cases.

Finalize CD

When a CD is finalized, it is ‘locked’ and can no longer be burned. Depending on the type of medium you are burning, this is a necessary process which enables the medium to be used to the full extent. All the options are correctly set in **Nero Burning ROM 7’s** default settings.

Write Speed

This drop-down box contains the write speeds supported by the recorder you have selected. This field is only displayed when you select a physical recorder and not the Image Recorder.

Write Method

There are two alternative methods available for burning media: 'Disc-at-once' (DAO) and 'Track-at-once' (TAO).

Disc-at-once

With 'Disc-at-once', the whole medium is written in one go without deactivating the laser. In the 'Disc-at-once/96’ (DAO/96) process, more data is written, which can produce better results for actions such as copying CDs.

Audio, Video and Super Video CDs should always be burned using Disc-at-once even though it is also possible to select Track-at-once. We do not recommend using Track-at-once. It is better to use Disc-at-once/96 for copying CDs.

Track-at-once

With 'Track-at-once', every track is written individually, which means that the laser is switched off after every track.

Number of Copies

This field contains the number of disks you wish to burn, whereby the standard setting is for one disk to be burnt. Enter the required number if you wish to burn more disks.

Buffer Underrun Protection

This checkbox is only present if the selected recorder supports a method which offers buffer underrun protection. The standard setting is for this box to be checked, as this protection ensures reliable burning of CDs.

Use Multiple Recorders

If multiple recorders are installed, they can be used to burn disks simultaneously. When the checkbox is activated, a window will appear after clicking on the 'Burn' button in which the desired recorders can be selected.

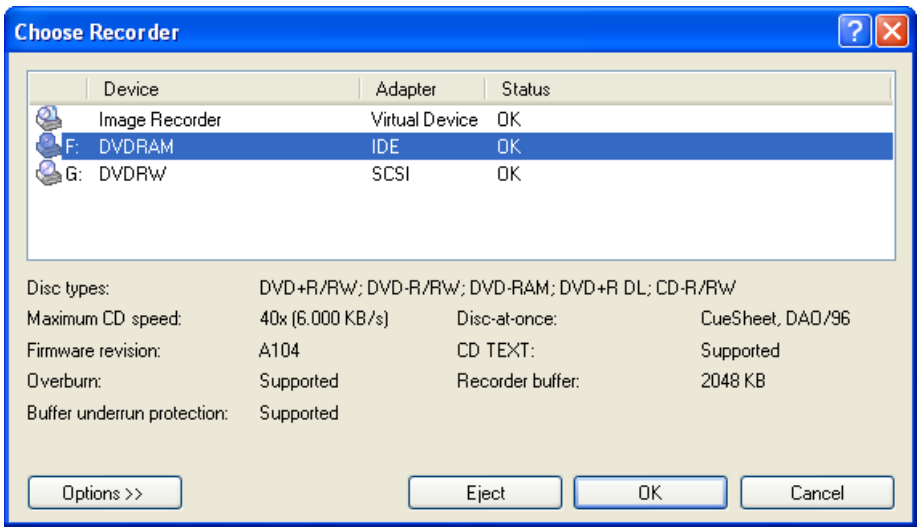
Virus Check Before Burning

This checkbox is only available to owners of a retail version of **Nero Burning ROM 7**. When the box is checked the data which are to be burned are checked for possible viruses before burning. This ensures that the burned disk is virus-free.

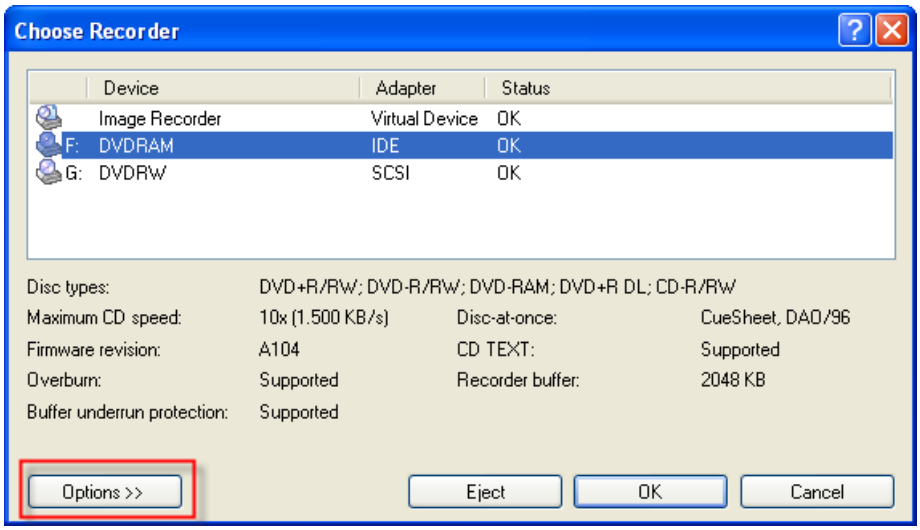
6.3.2 Book Type bestimmen

The Book Type field on a DVD helps the DVD player to identify the type of disc that has been inserted and to determine how compatible it is with the player. With some DVD recorders, **Nero Burning ROM 7** can change the Book Type setting when a DVD is burned. The Book Type setting is selected when the recorder is selected.

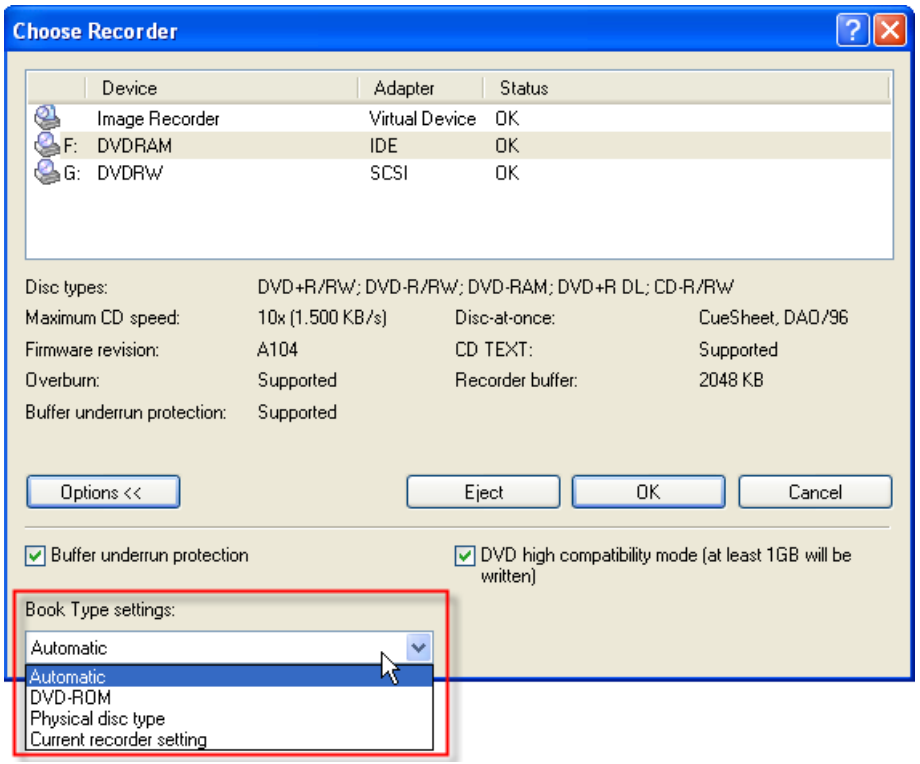
1. In the 'Recorder' menu, select the 'Choose Recorder' command or click on  .



2. To go to the Book Type settings, click the ‘Options’ button at the bottom of the ‘Choose Recorder’ dialog.



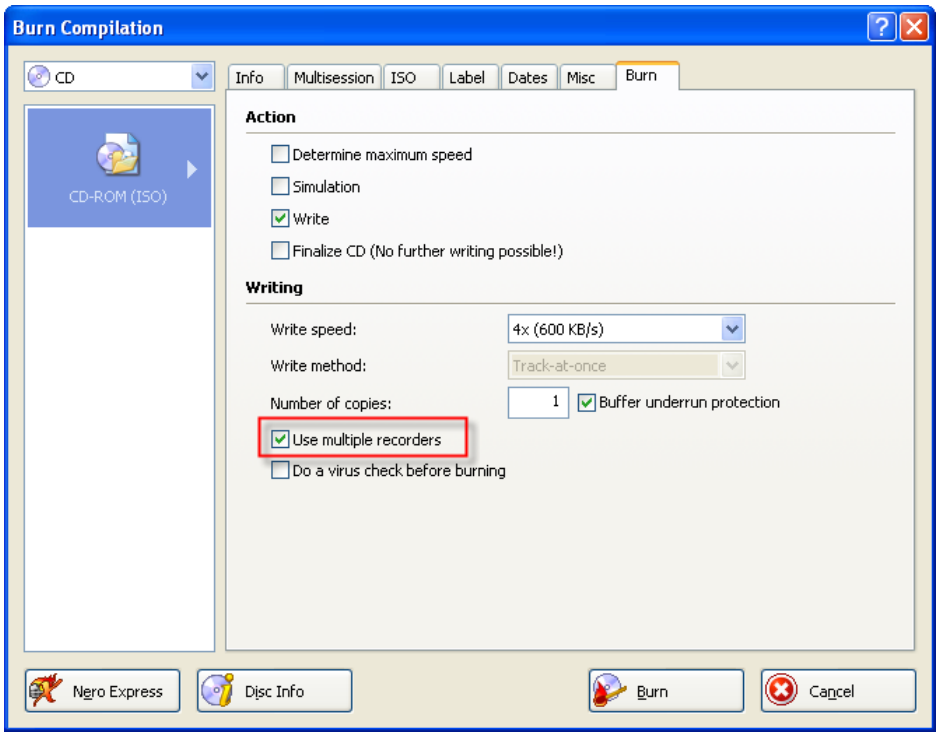
3. At ‘Book Type settings’, click the drop-down button, and select a setting from the following list:



Automatic	**Nero Burning ROM 7** automatically selects the most compatible Book Type for this disc.
DVD-ROM	Changes the Book Type to 'DVD-ROM'.
Physical disc type	Uses the Book Type specified on the inserted DVD.
Current recorder setting	Sets the Book Type to the current default setting on the recorder.

6.4 Use Multiple Recorders

Owners of the retail version of **Nero Burning ROM 7** can also burn simultaneously on more than one recorder if they have more than one installed.



7 Image file

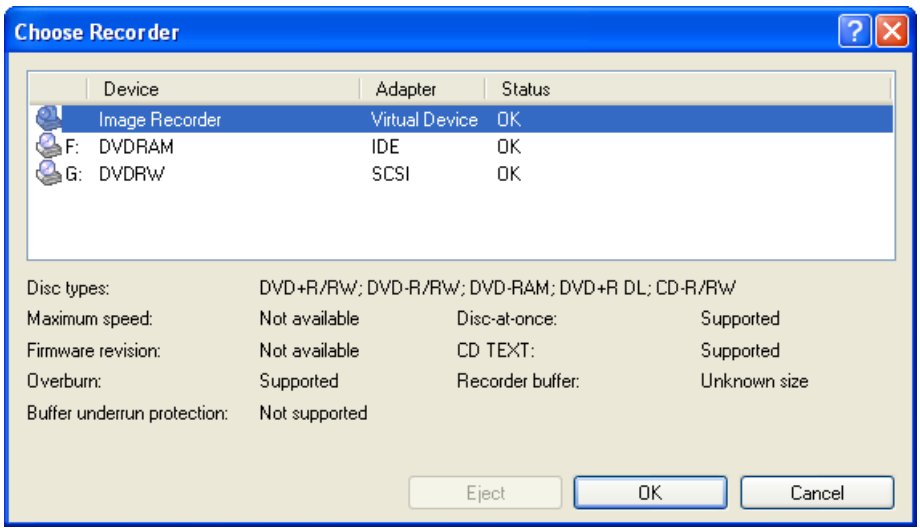
7.1 What is an image file?

An image file is the exact copy of the data on a disk. You can burn copies of this image file as often as you like. You can view the contents of the image file and simulate one or two drives with **Nero ImageDrive**.

7.2 Creating an image file

Here is a step-by-step guide to creating an image file using **Nero Burning ROM 7**:

1. From the **Recorder** menu select the command **Choose Recorder** and select **Image Recorder** (and not the currently installed recorder). Then confirm this selection using **OK.**

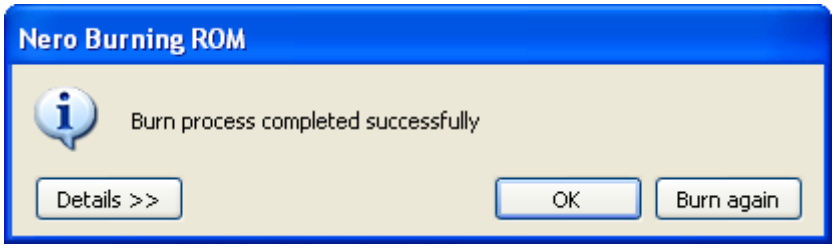


2. Next create a CD-ROM or audio compilation as described in the appropriate sections.
3. Click on the 

, button to start the burn dialog.
4. Click on the **Burn** button to start creating an image file.
5. Enter a name in the image file dialog box which opens and define the location for saving the file. The compilation files will be written to this image file, i.e. the image file will be at least as big as the files of the compilation in total. Now click on the **Save** button to start creating the image file.
   Nero Burning ROM 7 now carries out all the necessary stages as defined. A status window will appear showing the stages implemented and informing you how the burn process is progressing. As soon as **Nero Burning ROM 7** has

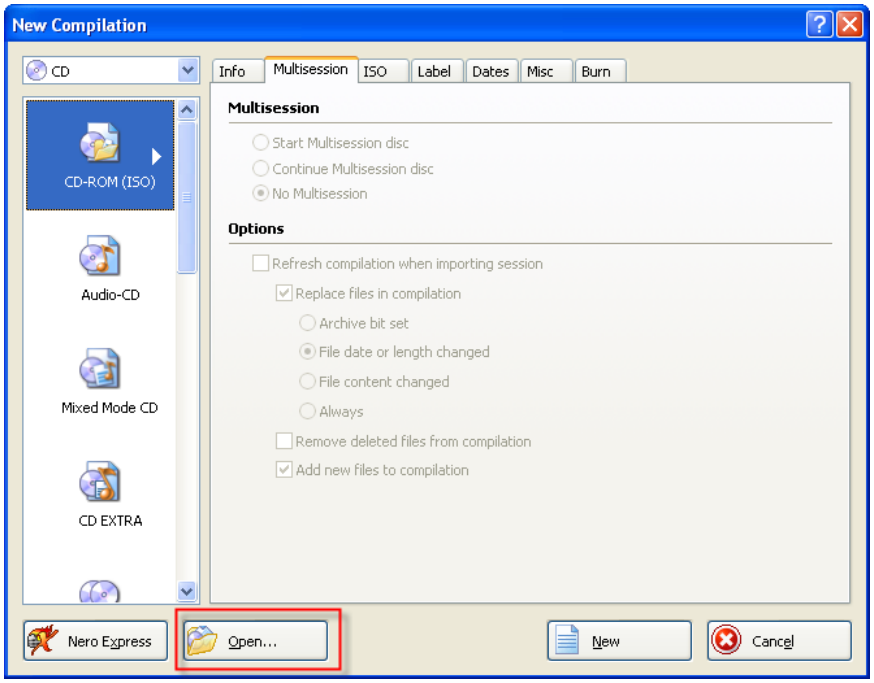
finished the write process a window will appear containing the message "Burn process successful".

6. Click on the **OK** button to close the dialog box.



7.3 Burning an image file

1. Start **Nero Burning ROM 7**.
2. Click on the 'Open' button.



3. Select the desired image file and click on the 'Open' button to select the file and close the window. You are then ready to burn the disc. For more information on how to do this, please read the chapter 'Burning a disc'.

7.4 Nero ImageDrive

Nero ImageDrive allows virtual CD/DVD drives to look and work like real drives. Load any CD/DVD image in your additional drives and access individual files and programs of the image directly via Windows Explorer – without burning them first!

Nero ImageDrive supports up to two image drives at the same time. The virtual drives are added to the existing drives and are each assigned a drive letter. This means that you can treat the image files like inserted discs. This is particularly beneficial if you require fast access to the disc, as often happens when gaming for example.

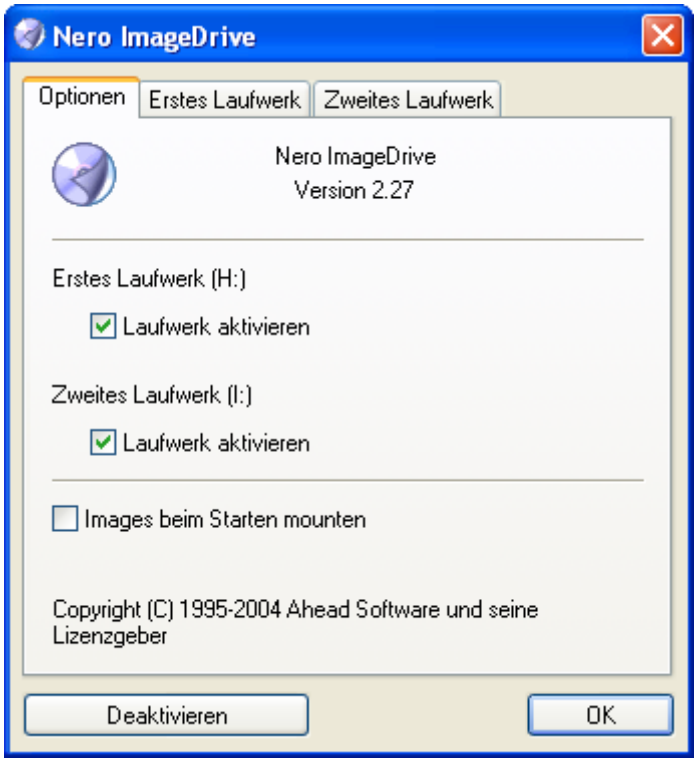
7.4.1 Installation of Nero ImageDrive

Nero ImageDrive is not automatically installed during installation of **Nero Burning ROM 7**. It is only installed if required, using a separate installer. Please proceed as follows to install **Nero ImageDrive**:

1. Please click on: Start > Programs > Nero > Nero 7 > Nero ImageDrive Installer
2. You will now be taken through the installation process. When the installation has been completed successfully you will be asked to reboot the system.
3. **Nero ImageDrive** is now installed and ready for use.

7.4.2 Activating drives using Nero ImageDrive

1. Start **Nero ImageDrive** either from the system control or by using Start > Programs > Nero 7 Premium > Tools > Nero ImageDrive.



Nero ImageDrive consists of two tabs: 'Options' and 'Information'. The Options tab is in front. From this window you can see whether an image file has been loaded and, if this is the case, the name of this file. The 'Information' tab shows the number, type and size of the tracks of the image file.

The "info" section contains two entries:

- 'Image' – this shows you which image file has been selected and/or was last selected. If no file name has been entered an image file has not yet been selected.
- 'Status' – this shows you whether the image file given in the 'Image' entry has been loaded or not. If no data has been loaded the 'Load' button appears in the "Info" section. If a file has been loaded the 'Eject' button appears in the "Info" section. This releases the image file again.
- The '...' button near the "Info" section allows you to select an image file.
- The 'Load/Eject' button allows you to activate or deactivate the image file. By clicking on the 'Load' button you activate the image file and using Explorer you can search through the contents of the image file as with a CD.
- If the "Load Image File when Starting Up System" control box is activated the given image file is loaded immediately after the system starts and is then available to you.

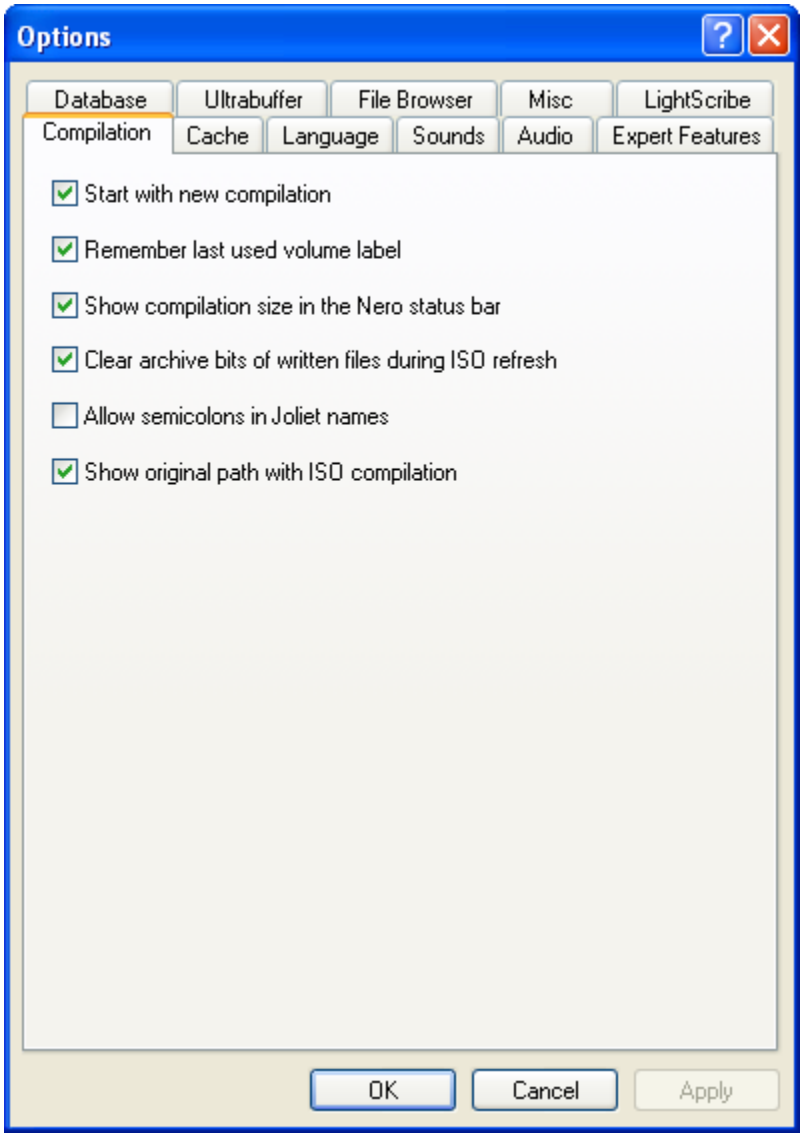
2. Click on the ... button to select the desired image file in the dialog box. When you have clicked on the 'Open' button the image file is loaded automatically and is available to you, i.e., you may skip the third point.
3. Once you have ejected the image file you may load the file by clicking on the 'Load' button.
4. Click on the 'OK' button to close **Nero ImageDrive**.

8 Setting options for Nero Burning ROM 7

8.1 Tabs

The best way to access the 'Preferences' area in **Nero Burning ROM 7** is to go to 'File' > 'Options'.

This window contains tabs where you can change the general settings for burning media with **Nero Burning ROM 7** to suit your own personal needs.



8.1.1 Compilation

You can change some of the basic settings in this tab. We recommend activating all the checkboxes as this makes **Nero Burning ROM 7** easier to work with.

8.1.2 Cache

This tab is where you define the drive and path for the cache, i.e. the memory in which data is stored temporarily before and during burning. If you have more than one hard disk installed, we recommend that you check the speed of the various disks and use the fastest as the cache.

The speed test cannot check the speed of network drives. We therefore advise you not to choose one of these as the cache.

8.1.3 Language

This tab is where all the installed languages are displayed and where you select the language in which you want the commands and functions and all entries in **Nero Burning ROM 7** to be displayed.

Only the languages you selected during installation are displayed. If you would like to use a different language, insert the installation CD and install the language.

8.1.4 Sounds

This tab is where the sounds played in connection with the various burning actions are defined. When **Nero Burning ROM 7** is installed, various sounds are loaded, but you can also link other sounds to the burning actions.

When the checkbox is activated, the selected sound will be played. When the checkbox is deactivated, the sound will not be played.

8.1.5 Audio

This directory shows the directory in which the audio plug-ins are installed.

8.1.6 Expert Features

As its name suggests, this tab is for expert users who have some experience with burning media.

The Overburn option should be used with particular caution, as it can damage your recorder. Use this option at your own risk.

For CDs burned in Disc-at-once mode, you have the option of writing a short lead-out that creates an additional 12 MB of space.

You can restore the default settings by clicking on the 'Restore' button.

8.1.7 Database

Nero Burning ROM 7 enables audio CDs to be linked to a local database.

This may be a user database containing the titles that have been burned with **Nero Burning ROM 7** or a program database. The program database comes from freedb.org and must be loaded onto your PC before use (see 'The Nero CD database'). Once you have done this, the title of an inserted CD and the artist are (usually) recognized and will not have to be entered manually.

8.1.8 Ultrabuffer

This tab allows you to specify how much memory **Nero Burning ROM 7**will use as a RAM buffer. This can either be done automatically or manually. We recommend using the Automatic Configuration option so as to achieve an optimum relationship between the existing buffer and the buffer reserved for burning.

When setting the buffer manually, make sure that it is not too small, as a large buffer will produce more reliable burning results than a small one.

8.1.9 File Browser

This tab allows you to change the settings for the File Browser – the heart of the **Nero Burning ROM 7** compilation window.

For example, you can specify whether the File Browser should be opened automatically when you open **Nero Burning ROM 7** and whether file operations like Delete or Rename should be confirmed.

8.1.10 Mics

This is where you set the options for the user interface, the compilations, burning, the database and further settings in **Nero Burning ROM 7**.

8.1.11 LightScribe

Here owners of LightScribe recorders can specify the quality that is selected as standard, select the default drive (if there is a number of LightScribe recorders installed) and specify whether a LightScribe label should always be printed.

9 Saving tracks using Nero Burning ROM 7

9.1 Saving audio tracks

1. If you want to save audio tracks from audio CDs onto the hard disk select the command 'Save Track' from the 'Recorder' menu. A dialog box will open with a list of all drives.
2. Select the drive which contains the audio CD and click on OK.
3. Now select all of the audio tracks which you would like to save.
4. Decide on the output format by clicking on the drop down button in the "output file format" field and select the desired format.

There are various settings for file formats which you can change if necessary. If you want to see or change the current settings for the selected format click on the 'Settings' button.

5. Change the file path for the files by clicking on the 'Browse' button and selecting the desired directory.
6. Click on the 'Start' button to begin saving. A status bar shows how much has been saved already. When saving ends the box is closed.
7. Click on the 'Close' button if you do not wish to save any more tracks.

After making your selection you can burn an audio CD.

9.2 Saving data tracks

In addition to the possibility of saving audio tracks as audio files **Nero Burning ROM 7** also offers the possibility of saving data tracks at this point.

The result is a **Nero** image file which can be burnt onto another Disk later or used with **Nero ImageDrive** as a fast Disk. Essentially the effect of this command could also be obtained by adding files from the appropriate data track to the hard disk and then burning an ISO compilation with the files included in it. However the saving of a data track followed by burning offers further possibilities:

- Tracks in unknown formats can also be stored. For example tracks recorded in Apple Macintosh HFS format. **Nero Burning ROM 7** can be used to back up and burn such tracks. This also applies to so-called hybrid CDs which include both Macintosh HFS and ISO data. When copying file by file on a PC the Macintosh information would be irretrievably lost. This also applies to some extensions of the ISO format such as the "Apple Extensions" or to Unix "Rockridge extensions". On the other hand if the path via 'Save Track' is taken all information on the data tracks is retained.
- When burning a **Nero Burning ROM 7** image file created by **Save Track** the CD does **not** have to be finalized, unlike a CD copy.

Advantage: If you burn this image you can append additional data or further sessions to this CD.

- CD image files can be burnt to CDs which are not finalized and not empty. This will, for example, allow you to create a CD containing the information from several "small" CDs in the form of several tracks and sessions! The advantage of this is making one CD from several CDs with only a small file content. With **Nero Multi Mounter** it is then possible to address the desired "sub-CD" and/or appropriate track specifically later on. Procedure for producing such a CD is by selecting 'Save Track' for each "small" CD required. Finally, using **Nero Burning ROM 7,** each image file produced is written to a blank disc one after the other using the 'Burn Image File' command. With the renowned "Autorun.Inf" files this guards against duplication of names which would otherwise unavoidably occur when compiling several CDs file by file. Moreover installation programs work without any problem when allocated to a defined CD data carrier name.
- If required a copy of multisession CDs can be created using this function. This will only work if the data tracks of the multisession CD are not "branched" between one another (such branching occurs, for example, when burning an ISO multisession CD using **Nero Burning ROM 7** with the 'Continue Multisession disk' command on the 'Multisession' tab.) The reason for this lies in the fact that the 'Save Track' command only applies to unbranched data tracks. If this were not the case image files could be created which did not contain all the files referred to in them. To then burn such CD images onto a CD would be senseless and dangerous because the original references to other tracks of the CD would necessarily be lost and/or would refer you to "nothing". This would mean that all files and directories originally on other tracks would be inaccessible but would be shown in the file directory of the CD. When using read access later to a data track burnt in this way read errors would appear and data extracted which did not compute. That is why the saving of ISO tracks with references embracing all tracks is not supported at all in **Nero Burning ROM 7.**

On the internal functioning of this command: **Nero Burning ROM 7** tries first of all to find the format of the data tracks. Then all blocks of data tracks are saved to the image file. Finally, if necessary, further adaptation work is undertaken to allow the data tracks to be burnt onto non-empty CDs. For the experts among you: the ISO file system has to be "relocated" if necessary. Do not despair: **Nero Burning ROM 7** will handle the whole thing for you without you having to give it a thought.

Nero Burning ROM 7 controls the saving of ISO and HFS data tracks. The vast majority of existing CD ROMs for PCs and Apple Macintosh are saved in this format. However if the data on the CD is neither in ISO (PC) nor HFS (Macintosh) format the results when burning onto a non-empty CD can be non-functional. You can find the format of the data track from the display of the track list after selecting the 'Save Track' command. If the appropriate track is displayed neither as ISO, HFS, hybrid nor Joliet but only as "data mode 1", without any more details, proceed with care! **Nero Burning ROM 7** allows you the opportunity to save and burn data tracks in unknown formats onto it (for example native Unix file systems). Here all blocks of the track are then simply copied 1:1. The responsibility for deciding whether you can burn such a track "without relocating it" onto a non-empty CD is left entirely up to you.

10 LightScribe

10.1 LightScribe System requirements

To create LightScribe labels, separate hardware and software system requirements need to be considered.

Operating system

- Windows 2000
- Windows XP
- Windows 2003 Server
- Windows Media Center Edition 2004 or larger

Software

- Nero 6.6.0.8 (or higher)
- LightScribe Host Software must be installed

Hardware

- LightScribe compatible recorder
- LightScribe suitable disc

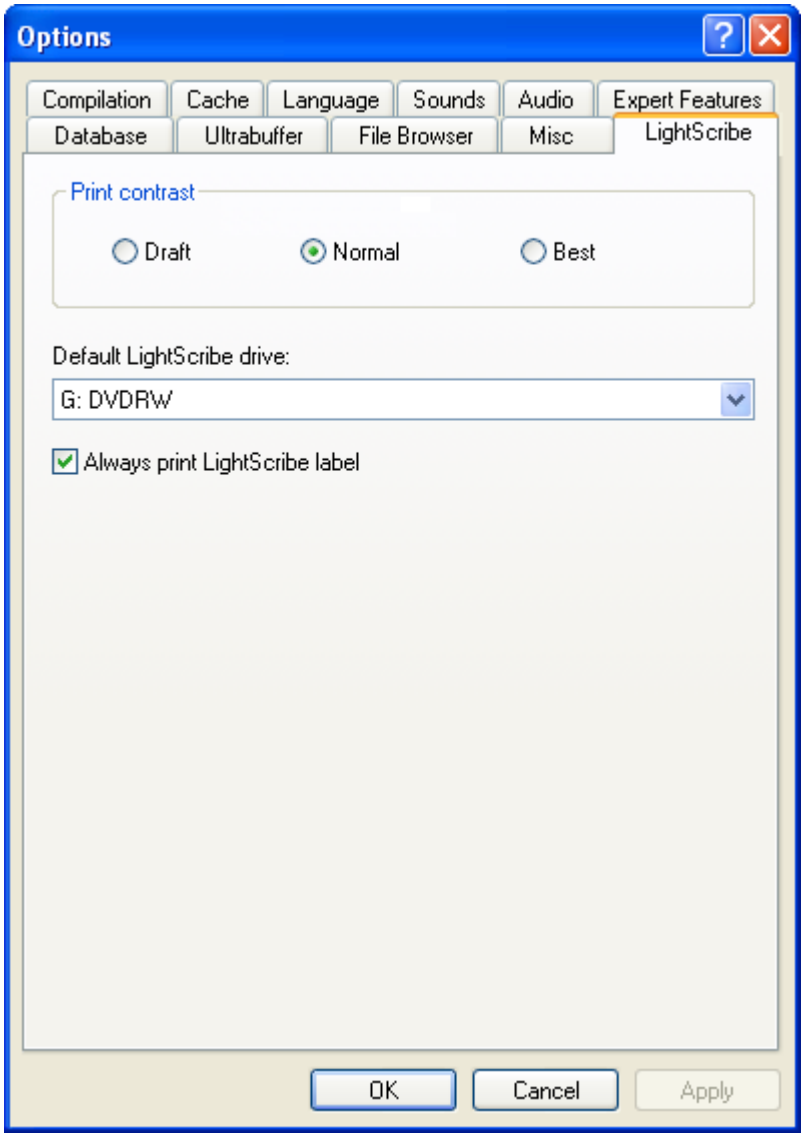
10.2 Printing LightScribe labels

LightScribe is a process that enables CDs and DVDs to be labeled in the recorder. This requires both a suitable burner and a special medium. The label side of the media has a special color layer and sometimes also a thermal layer; this is heated by the laser in the recorder in such a way that images and text are printed on the medium. After burning the compilation, the disc is simply removed from the recorder, turned over and the LightScribe label is created.

When a label is created, **Nero Cover Designer** opens. If you have created disc labels before using **Nero Cover Designer**, then you will be able to create LightScribe labels without any problem. For their creation, it basically does not matter whether a label is printed on paper and then stuck onto the medium or printed directly on the medium.
You will find full details on how to create labels in the **Nero Cover Designer** manual.

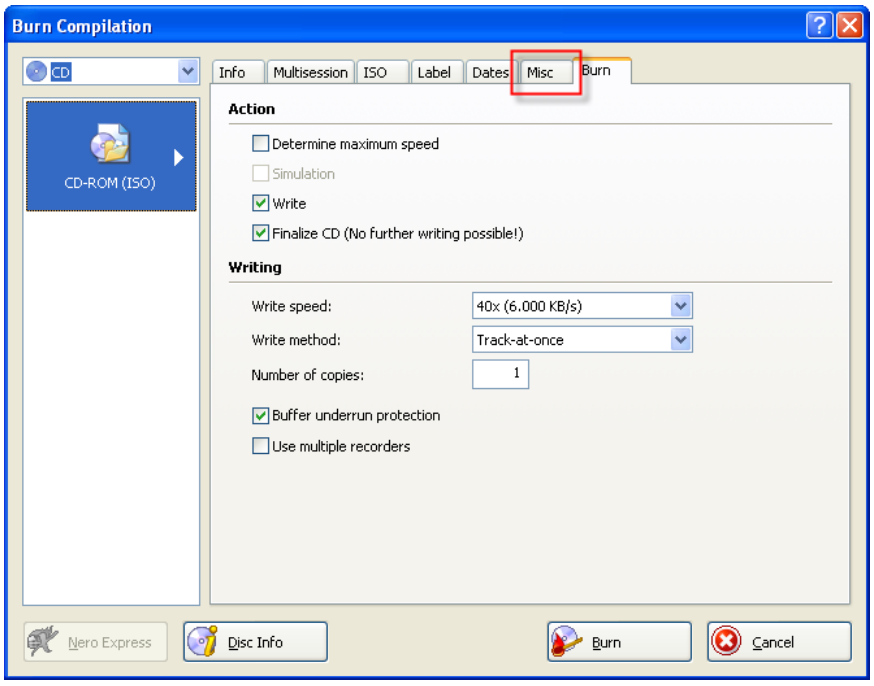
10.3 Creating a compilation, and burning and printing LightScribe labels

1. Start **Nero Burning ROM 7** and create a compilation.
2. Click on the  icon and select a recorder that can print a LightScribe label.
3. If you are not sure whether a LightScribe label will be printed, check the settings. Choose 'File' > 'Options' > 'LightScribe' and check if the control field 'Always print LightScribe Label' is selected. If this is not the case, then please select it and click on the 'OK' button to close the tab.

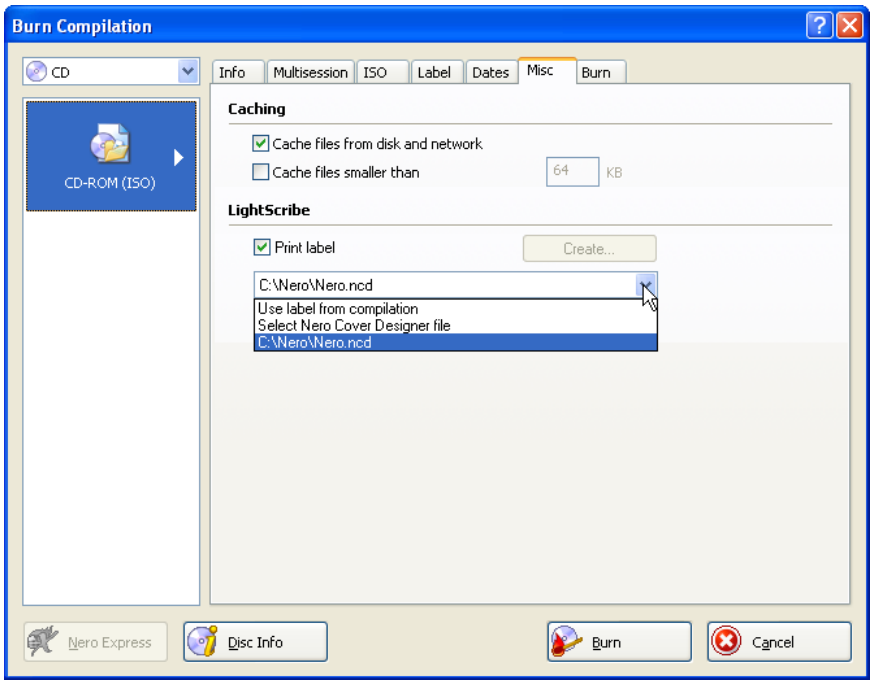


4. Click on the button  to go to the area where you can make the burn settings and create the LightScribe labels.

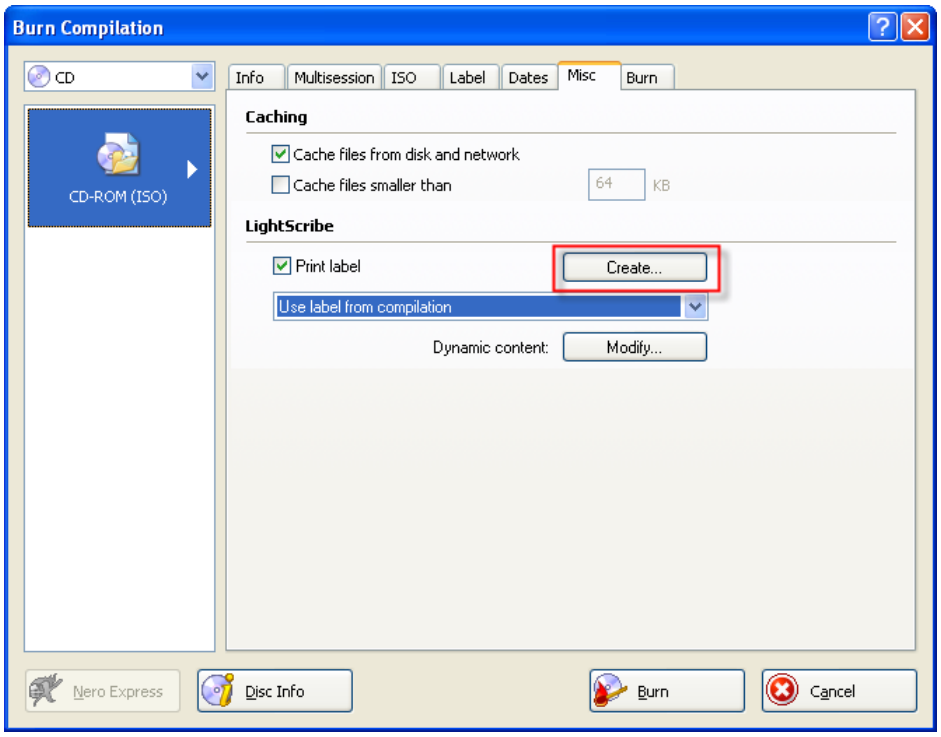
5. Click the 'Misc' tab to go to the LightScribe settings.



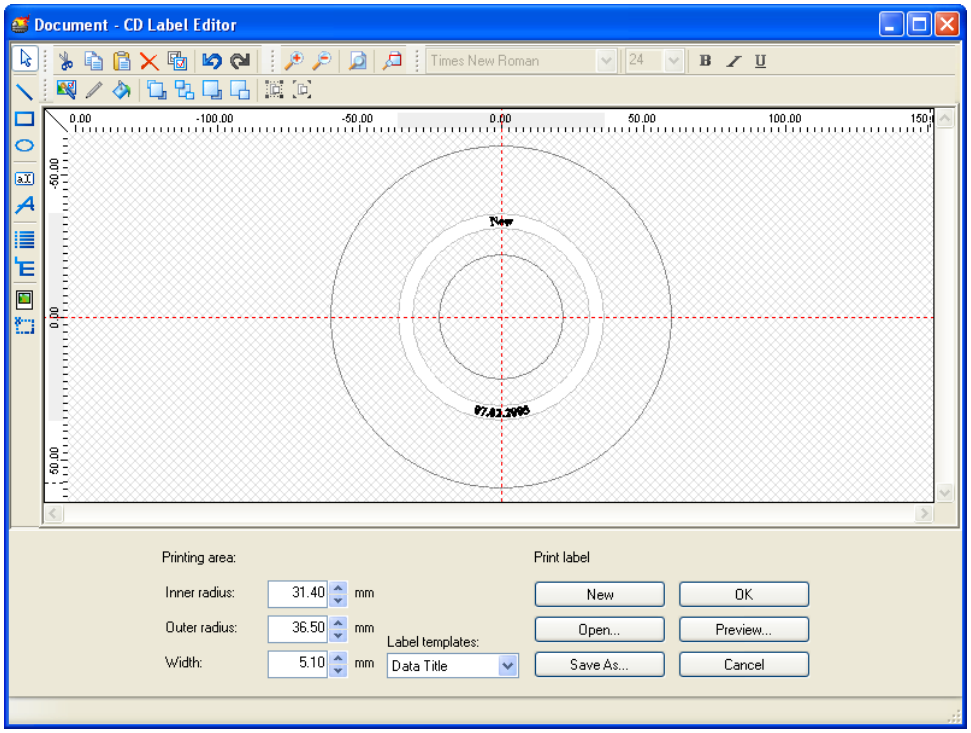
6. Either select a label that was previously created with **Nero Cover Designer** or create a new one ('Use label from compilation').



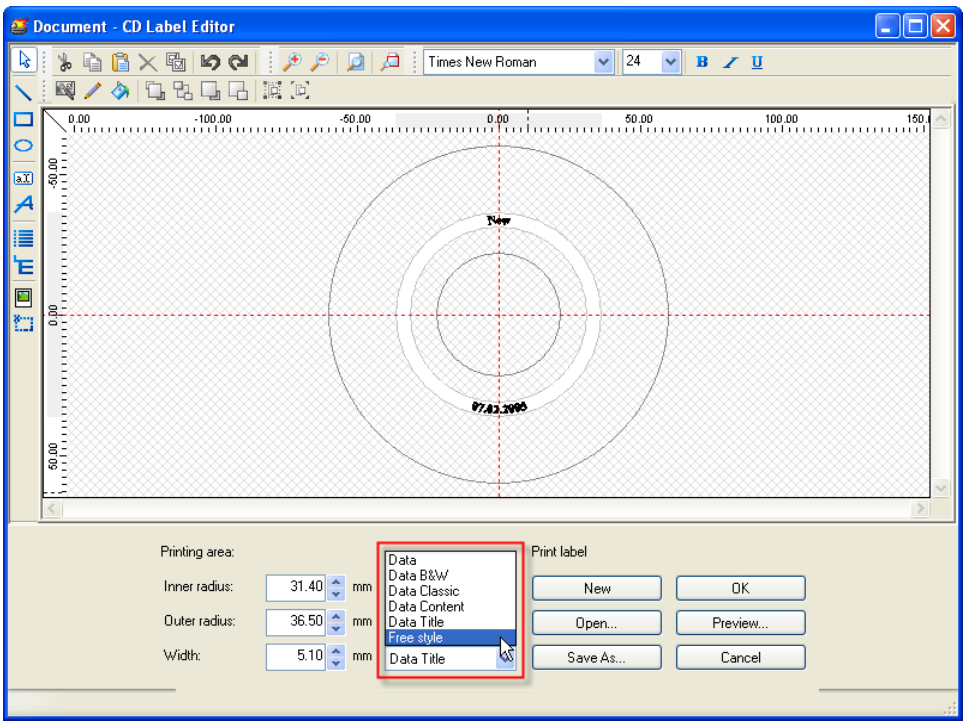
7. Click on the 'Create' button to create a new label; this launches the Label Editor.



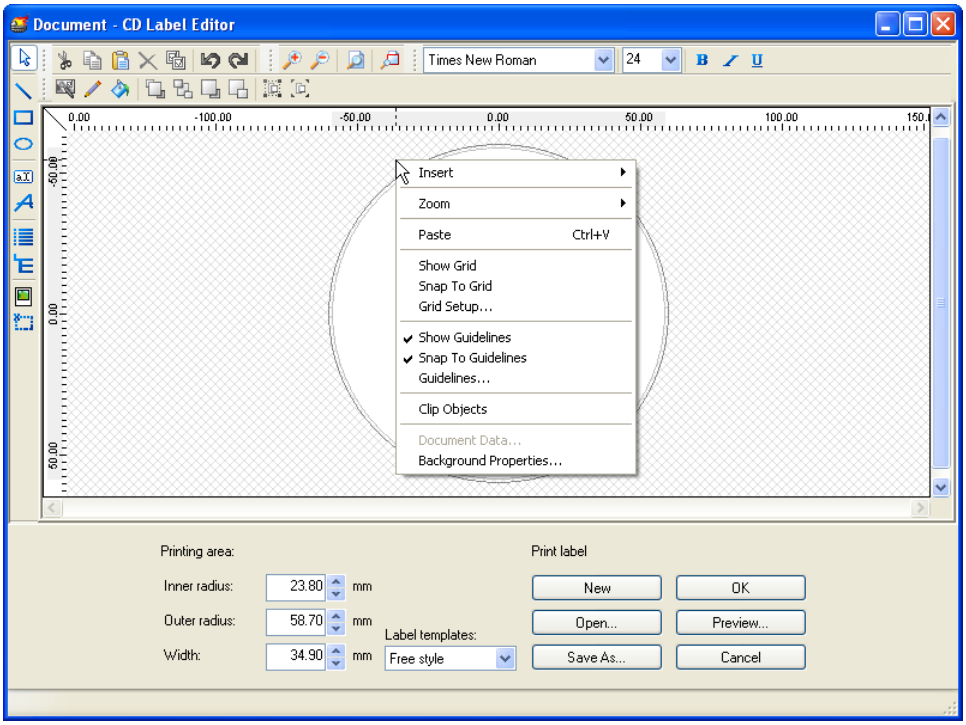
Launches the Label Editor.



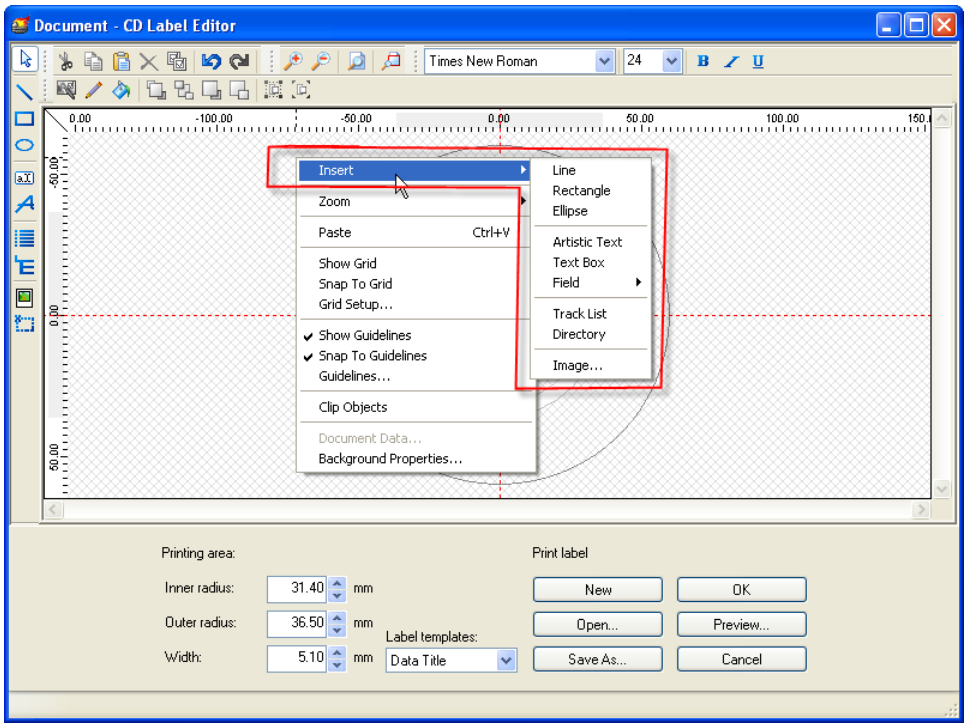
8. Click in the 'Label templates' area on the dropdown button and choose a template. You can choose between templates with a label design or an empty template (Label template: 'Free style').



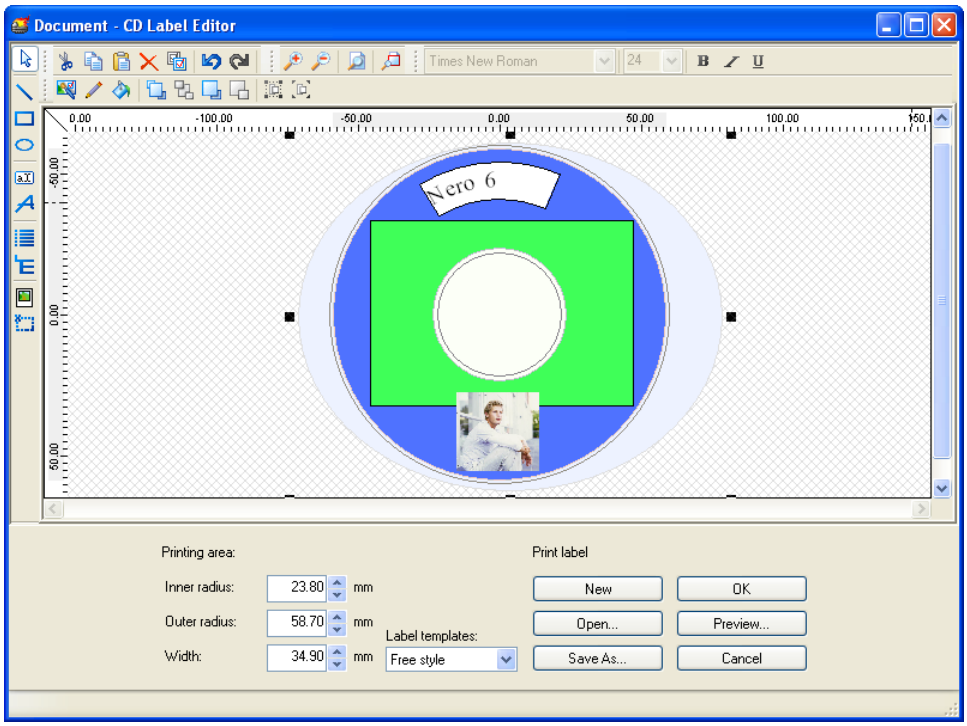
9. You can now open an existing label ('Open' button) or create a new label. Place the mouse pointer in the processing window and click the right (!) mouse button to open the shortcut menu.



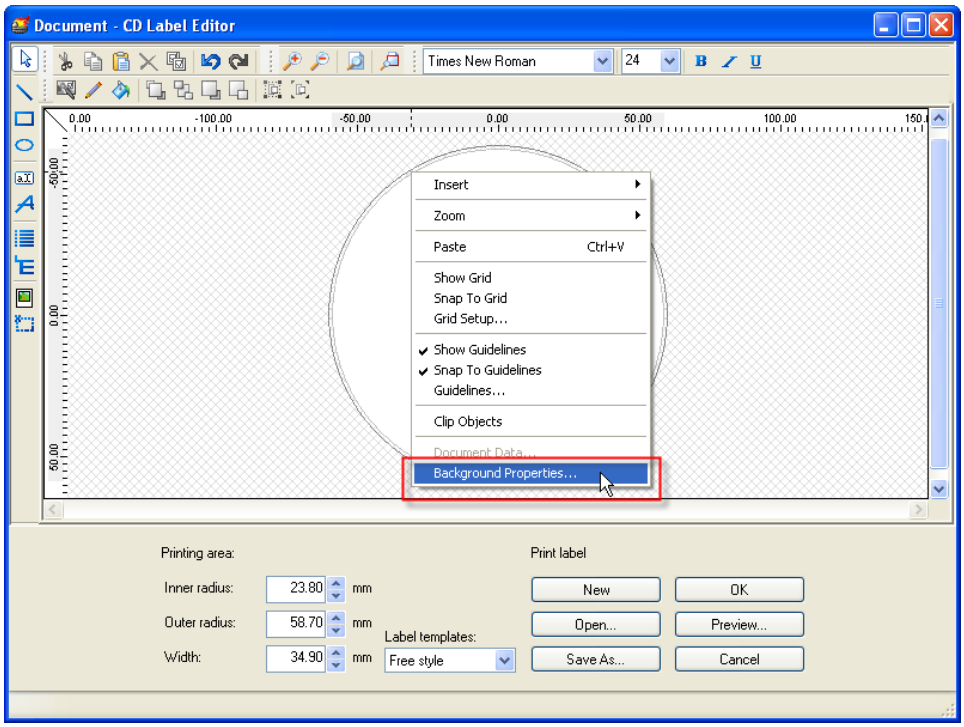
10. If you want to insert something, then select 'Insert' and choose the element required.



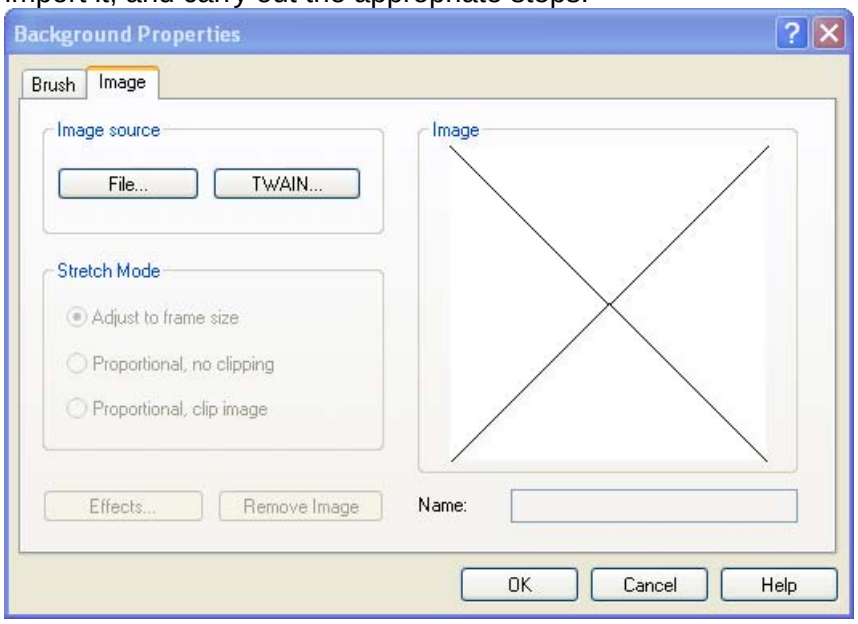
You can insert various elements, such as an image, line, rectangle, ellipse, text or fields. In the following picture, a blue circle, a green rectangle, a photo and some text have been inserted.



11. If you want to have a background image over the entire disc, then select the command 'Background Properties'.

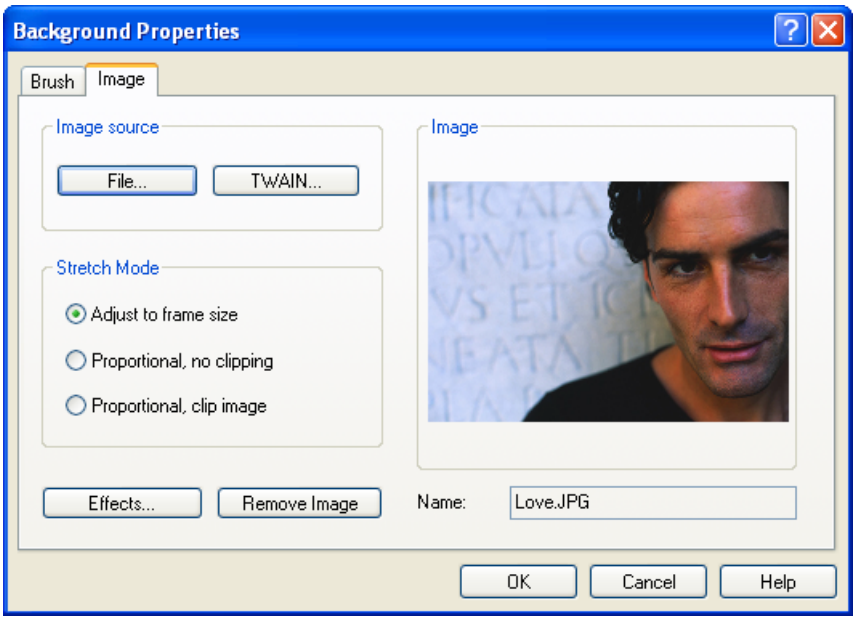


12. Choose 'File' if the image already exists as a file, or 'TWAIN' if you want to import it, and carry out the appropriate steps.

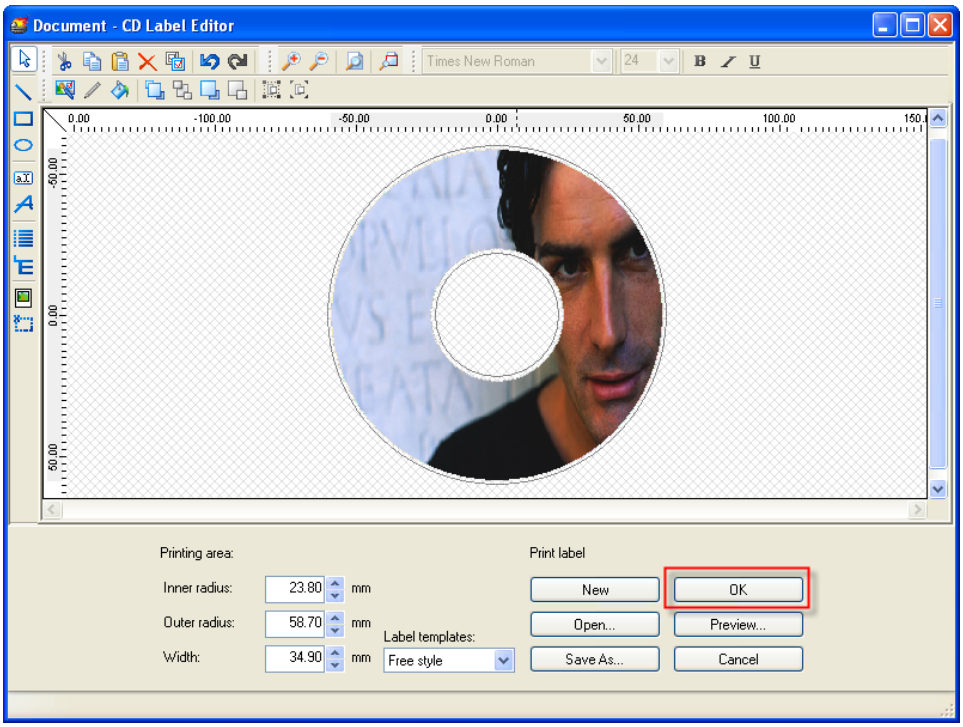


You can see the selected image in the preview window.

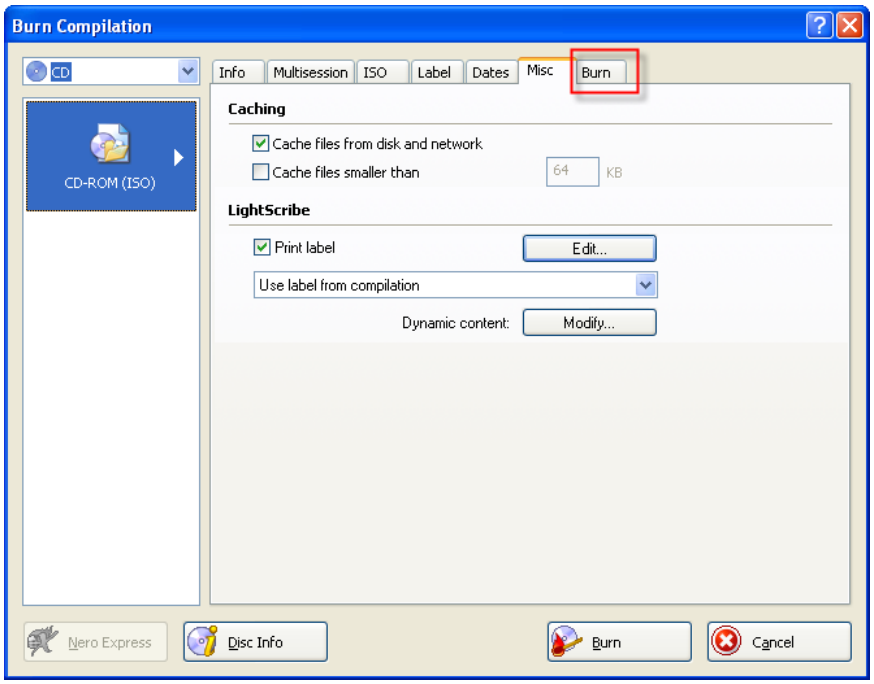
13. Click on the 'OK' button to close the window and insert the image as a background.



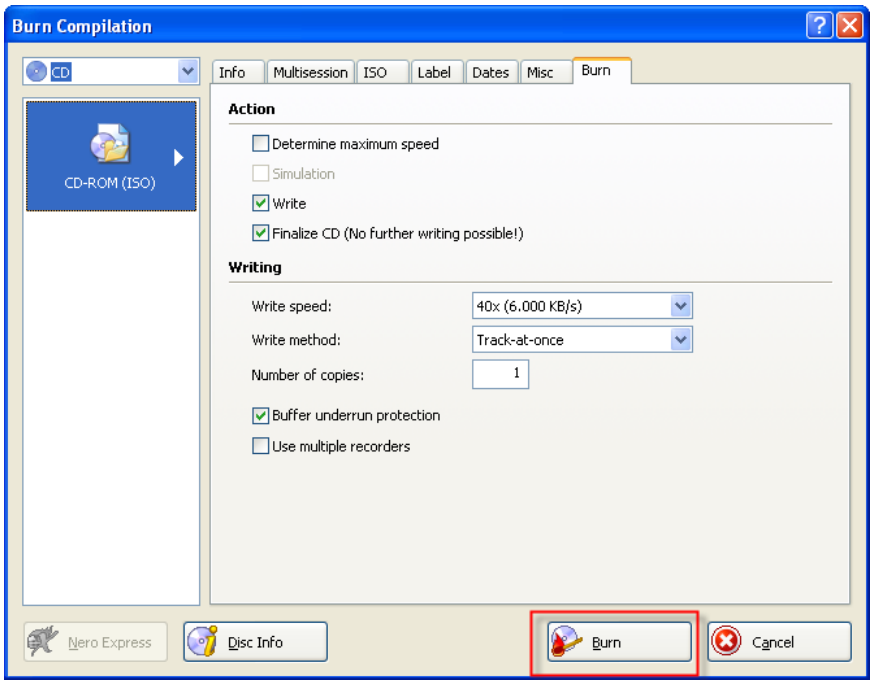
14. When you are satisfied with the label, click on the 'OK' button to close the Label Editor.



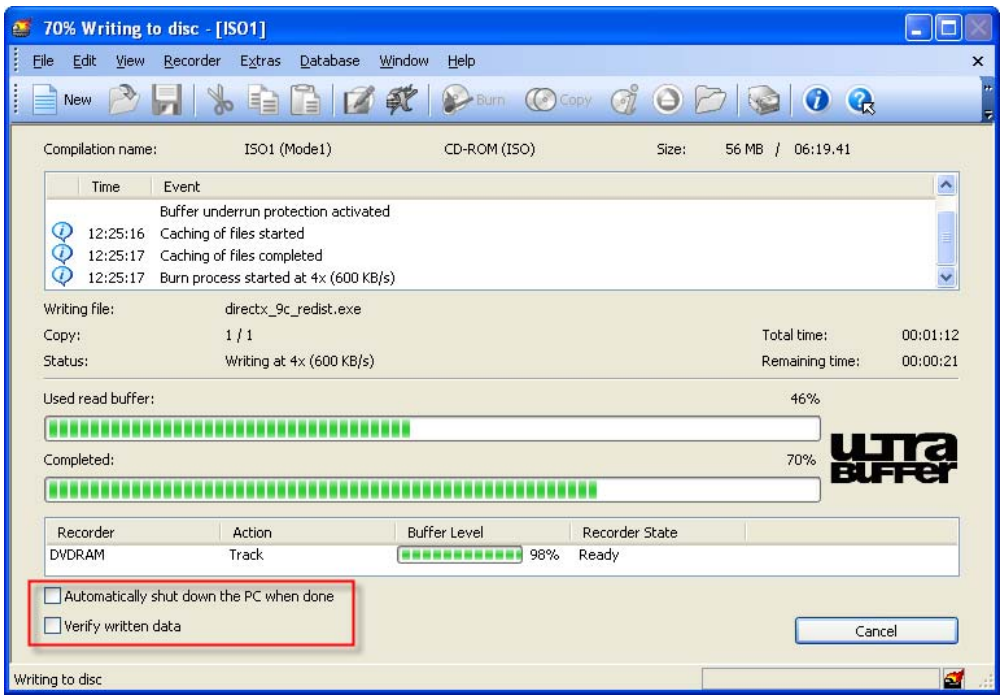
15. Click on the 'Burn' tab to go to the burn settings.



16. Check the burn settings and change them if necessary. Insert a LightScribe disc in the recorder and click on the 'Burn' button to start the burn process.

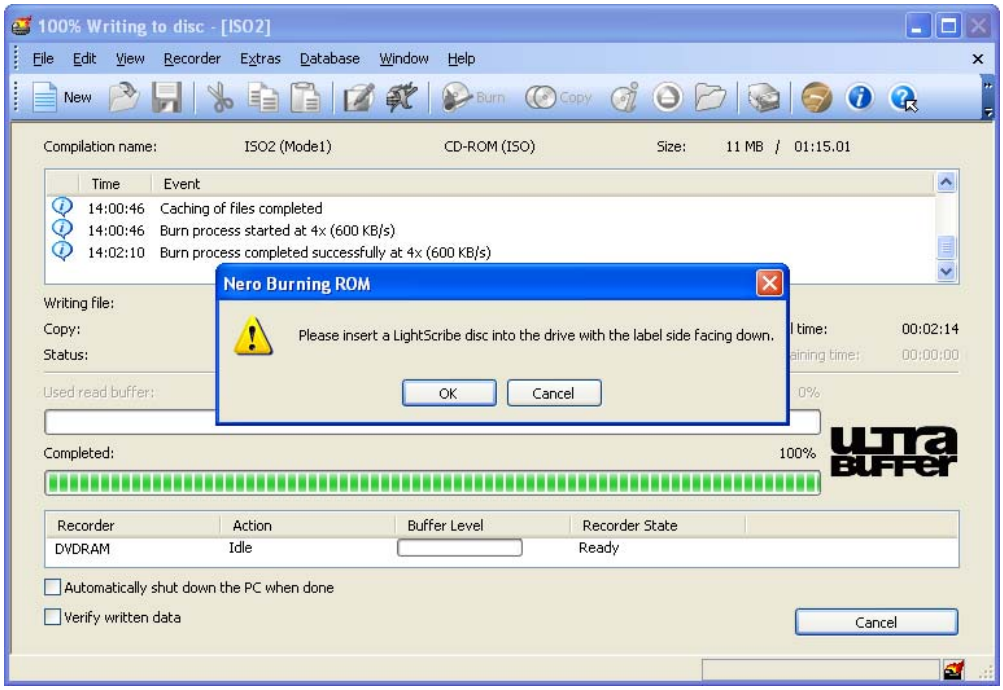


In the next window you can follow the progress of the burning process and set further options, such as computer shut-down or data checking when burning is complete. Do this by activating the appropriate check box.

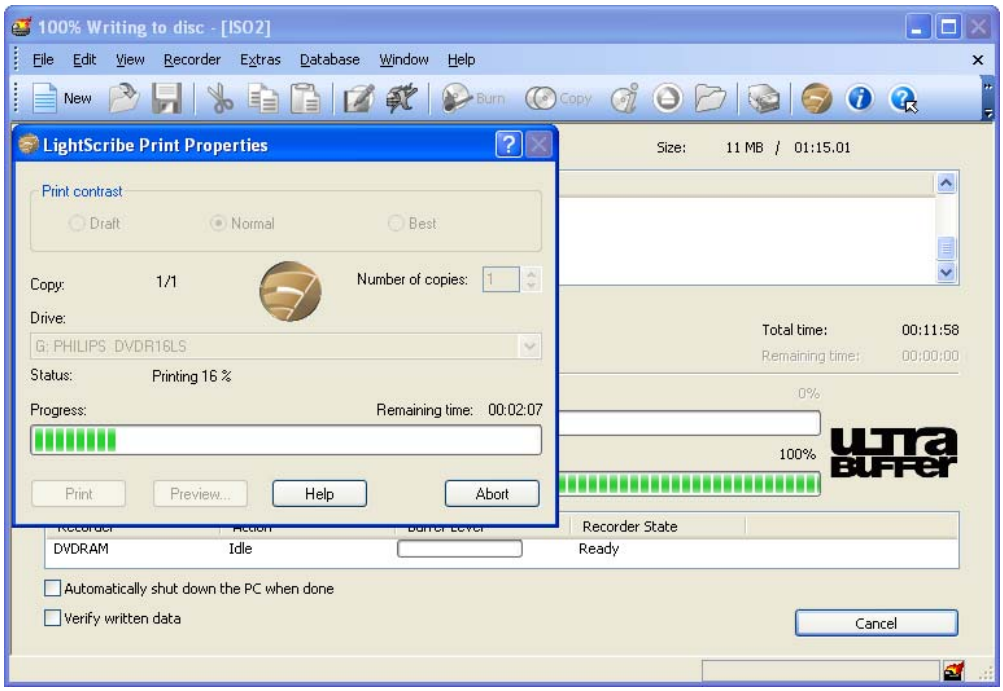


When the burning process is complete the disc is ejected.

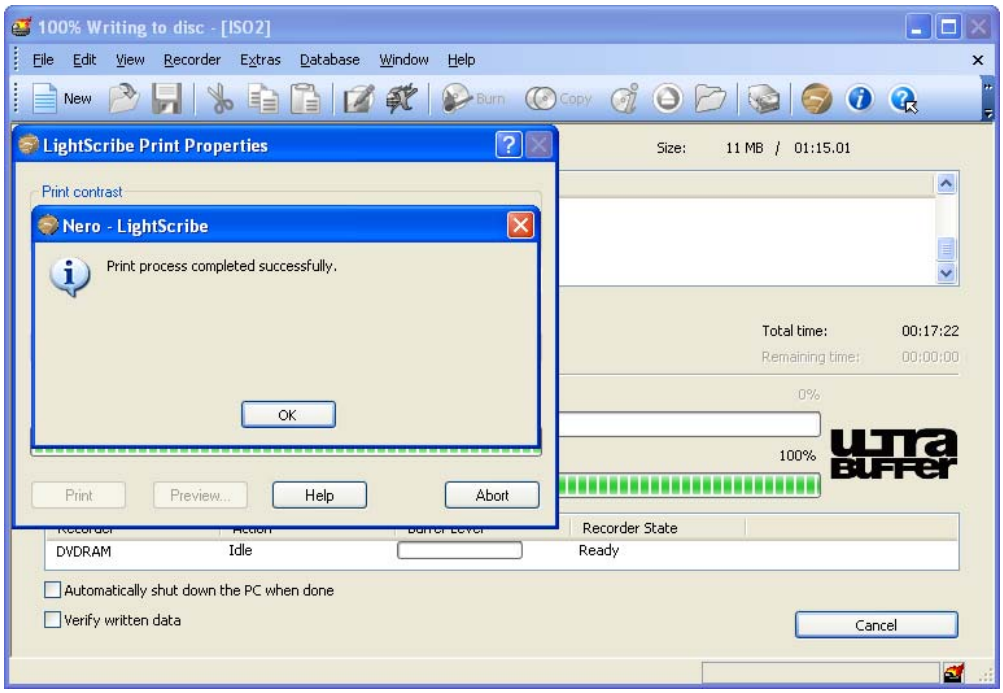
17. Please insert a LightScribe disc with the label side facing down into the recorder and click on the 'OK' button.



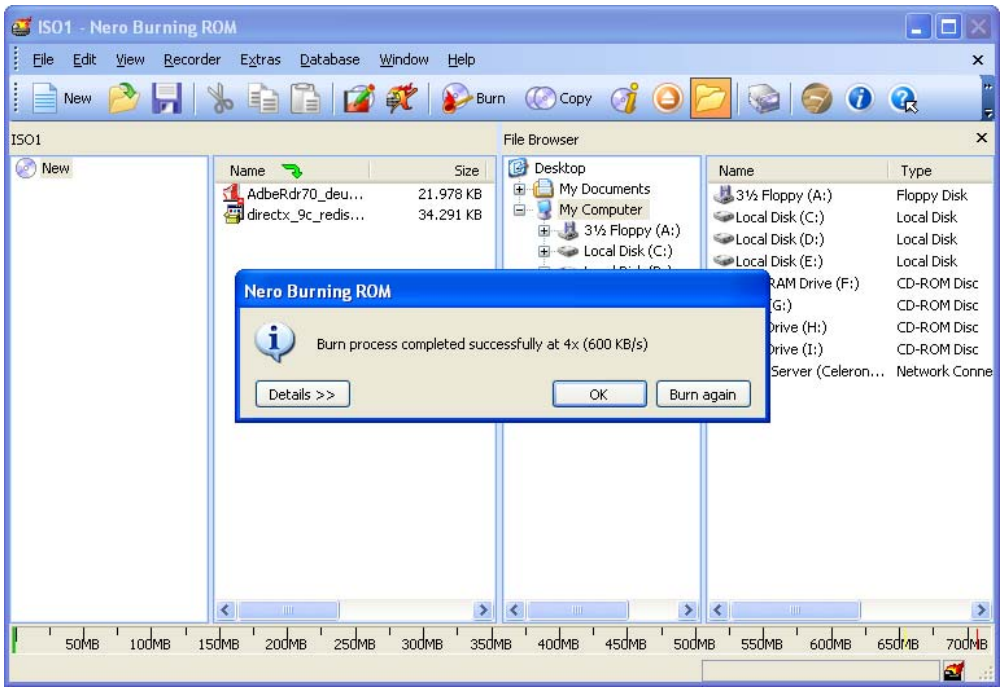
Prints the LightScribe label.



18. You will be informed when the write process ends. Click on the 'OK' button to eject the LightScribe disc.



19. The tray opens and a message shows that the burning process completed successfully. Click on the 'OK' button to close the window.



10.4 LightScribe FAQs

What is LightScribe?

LightScribe Direct Disc Labeling is a new process for labeling CDs and DVDs. It enables private and commercial users to easily achieve professional results in silk-screen printing quality. First of all, the data are burned on the blank disc by laser as normal. The medium is then turned over and placed in the burner drawer again. Using the same laser as for burning the data, a precise, iridescent label is then produced, which can consist of any text and graphic elements. So you no longer need to use a printer, permanent marker or self-adhesive disc labels.

How are LightScribe discs detected?

LightScribe labels can only be printed on discs having a special surface and which have been specially made for this purpose. On insertion, LightScribe checks whether the identification for LightScribe discs is present in the center of the disc. If the disc is not detected, please go through the following steps:

a. Check whether you have inserted a LightScribe disc.

b. Check if the LightScribe disc is sitting correctly in the recorder – with the label side facing down.

c. Clean the center of the disc with a lint-free cloth to remove any dirt or smears.

d. Place another LightScribe disc in the recorder if the problem has still not been cleared.

How good is the print quality?

LightScribe offers three different levels of quality: Draft, normal and best.

With each level of quality there is an improvement in the contrast of image and text, though the time to print increases.

How fast can a LightScribe label be printed?

The time to print a LightScribe label depends on a number of factors: the amount of data to be printed, the position of the data on the label, the selected print quality and the disc used.

When printing labels, the LightScribe recorder burns the image and text in concentric rings from the inner diameter to the outer diameter. Rings with no data are skipped. The thickness of the rings determines the contrast and hence the print quality.

What labels can I print?

Basically, there are three different label print modes:

Title: Only the name of the disc or compilation appears on the disc. This labeling method allows the disc to be identified.

Contents: Information about the contents of the disc is printed on the disc. This is the recommended labeling method if there are a number of discs or compilations with the same name.

Complete: Images and text appears on the disc; these creative elements (almost) completely fill the disc and make it unique. The format template for this labeling method is called 'Free style'. This is the recommended labeling method for important discs or discs with a special content.

Why should I update my LightScribe Host Software?

For various reasons, a window sometimes appears recommending an update for the LightScribe Host Software. The commonest reasons are:

a. The installed LightScribe Host Software is faulty and needs to be reinstalled.

b. The installed LightScribe Host Software is not the correct version.

c. An attempt was made to access a disc that is not certified or is not LightScribe compatible.

Establish an Internet connection and click 'Update'. In the window which opens, select the option 'Save' and specify where you want the LightScribe Host Software to be saved.

To install the update you must have Administrator rights.To install the update, double-click the file that you have downloaded and follow the instructions of the Installation Wizard.

Why is only simplified (generic) printing of the label possible?

If a LightScribe disc is inserted and the LightScribe Host Software offers simplified (generic) printing, then the printing is not optimized for that disc. For optimal printing results, an update of the LightScribe Host Software is recommended and the corresponding window opens.

Establish an Internet connection and click' Update'. In the window which opens, select the option 'Save' and specify where you want the LightScribe Host Software to be saved.

To install the update you must have Administrator rights. o install the update, double-click the file that you have downloaded and follow the instructions of the Installation Wizard.

11 Miscellaneous

11.1 Virus Checker

The Virus Checker is only available with the retail version of **Nero Burning ROM 7**.

For safety reasons, an antivirus program has been integrated into **Nero Burning ROM 7**, which checks the data to be written onto the CD in order to ensure that no files with viruses are included on the CD. You can keep the antivirus database, which is the key part of any antivirus software, constantly updated via the Internet.

11.1.1 Updating the database

1. Set up an Internet connection.
2. Start **Nero Burning ROM 7**.
3. Choose **Update Antivirus scanner** from the **Help** menu.
4. In the dialog box which appears, click on **OK** to start the update. A link is created to the FTP server and the database is automatically updated. After the update has been successfully completed, you will see a message telling you that the database is now up-to-date.
5. Click on the **OK** button to close the dialog box.

We recommend that you update the antivirus database regularly.

11.2 Nero Burning ROM 7 level indicator

The level indicator is at the bottom of the **Nero Burning ROM 7** main window. The level indicator allows you to tell whether the data you have selected will fit on the disc. As data is normally measured in megabytes and audio data in minutes of playing time, the **Nero Burning ROM 7** level indicator switches between megabytes and minutes depending on the type of data being written to CD. A blue bar in the level indicator shows the size of the current compilation.

Standard CDs normally have a capacity of 650 MB (or 74 minutes). There are now blank CDs available with a capacity of 80, 90 and 99 minutes. Therefore the capacity of blank CDs is currently between 74 and 99 minutes. The **Nero Burning ROM 7** level indicator attempts to accommodate this by showing a yellow line at 74 minutes (or 650 MB) and a red dashed line at 80 minutes (or 700 MB).

If you want to move these markings, you can do so using the **Nero Burning ROM 7** Preferences menu item.

You should note however that the value you enter here only affects the display of the level indicator. It is not possible, by changing these values, to create extra

storage space where none actually exists. If you want, you can also switch off the display of the level indicator from the **Nero Burning ROM 7** Preferences dialog box.

Although the **Nero Burning ROM 7** level indicator is useful, as a result of the following problems, its accuracy cannot be guaranteed:

- With the exception of the continuation of multisession CDs, in most cases the destination CD is not put in the recorder until a later stage, which means that **Nero Burning ROM 7** cannot yet tell whether the compilation will fit on the destination CD. The sizes given on the level indicator must therefore be based on the assumption that an empty CD is being burnt.
- In the case of ISO compilations, the structure of the data to be burnt is relatively complex and dependent on a large number of different factors. The creation of this type of structure is too time-consuming to be done in real time. This means that until the burning process actually starts, it is not possible to determine exactly how much space will be needed for the data on the CD. The sizes given on the level indicator are therefore just a good estimate of the space needed by a compilation.

11.3 Overburning

In theory, both CDs and DVDs can be overburned, however overburning is dependent on so many aspects when it comes to DVDs (recorder, firmware, media) that it is not recommended. It goes without saying, however, that even DVDs can be overburned if the appropriate option is set. It is and will remain an option exclusively for expert users. The overburn process is therefore explained for CDs only.

11.3.1 What is overburning?

The number of minutes of music or megabytes of data which will fit on the disc is printed on every blank CD. You can check the capacity of your disc using the 'Disc Info' item on the 'Recorder' menu. When you overburn a blank CD, the size of the disc is ignored by **Nero Burning ROM 7** and data is written to the disc beyond the specified capacity. It is clear that ignoring the capacity of the disc entails a certain amount of risk.

This applies both to 74 and 80 minute CDs. In addition the CD standard contains a restriction which states that there are no CDs available with a capacity larger than 80 minutes. This means that all CDs are seen by **Nero Burning ROM 7** as 80 minute CDs even if they are sold by the manufacturer as, for example, 99 minute CDs. You can only write 99 minutes of audio to the CD by overburning.

11.3.1.1 What makes overburning possible?

The capacity specified by the manufacturers of blank CDs is the minimum size of the writable area on the CD. The manufacturing tolerances mean that the actual writable area is larger than the specified capacity. This additional area is often 2-3 minutes long, but can be significantly shorter or longer.

11.3.1.2 Risks involved in overburning

- Read errors, sound interference, incorrectly written data
  The end of the writable layer can be of poorer quality than the rest of the disc, which means that read errors can occur at the end of the disc or in areas outside the normal storage area of the disc. In the case of audio CDs this means unexplained errors, all types of sound interference and the audio CD player hanging at the end of the CD. For data CDs it means that it is not possible to read a number of files.
- Error messages during the burning process
  The burning process may be interrupted near the end by an error message, such as 'Write emergency' or 'Track following error'. However, the CDs can often be read almost up to the end, despite these error messages. The point on the disc at which errors may occur is dependent on the make of the blank disc and the type of recorder. As there is no way of telling the exact excess capacity of a CD automatically, you will unfortunately need to make a few experiments.
- Damage to the recorder
  The third and most unpleasant problem is the possibility of damaging the recorder. In practice this is unlikely to happen.

11.3.1.3 Is it always possible to overburn?

No
CDs can only be overburnt in disc-at-once mode. It is not possible to exceed the specified capacity of the blank disc in track-at-once mode.

In addition, some recorders are not able to overburn. Using **Nero Burning ROM 7**, it is easy to find out whether or not your recorder can overburn:

- From the 'Recorder' menu, choose the item 'Choose Recorder' and select your recorder from the list. You will find information about whether the recorder supports overburning in the recorder information box.

11.3.2 Overburning a CD

1. First check whether your recorder can overburn or not. From the **Recorder** menu, choose the item **Choose Recorder** and select your recorder from the list. You will find information about whether the recorder supports overburning in the recorder information box.
2. Activate the overburn option within Nero Burning ROM 7. From the 'File' menu, choose 'Options' and then click on the 'Expert features' tab.
   Activate the checkbox which allows overburning and specify the maximum CD length. In theory you can choose any size up to 99 minutes and 59 seconds. Initially you should enter a length 2 minutes longer than the specified capacity. If SCSI/ATAPI errors occur at the end of the simulation or burning process, we recommend that you reduce the maximum overburn capacity or use a different make of CD. If no errors occur, you can gradually increase the overburn capacity.
3. Click on **OK** to confirm the change and close the dialog box.
   This setting will have the following effect on the burning process:
   If the amount of data to be burnt is larger than the normal capacity of the blank CD, but less than the maximum overburn capacity, **Nero Burning ROM 7** will ask at the beginning of the burning process whether you really want to

overburn. If you answer yes to this question, **Nero Burning ROM 7**. will start the burning process. If you answer no, the burning process will be aborted because there is not enough space on the destination CD.

11.4 Automatic system shutdown at the end of the burning process

Nero Burning ROM 7 can, if you want, shut down Windows and switch off your computer at the end of the burning process.

In some cases the PC cannot be automatically switched off, although you have selected the shutdown option. This may be for one of the following reasons:

- The energy saving and/or ACPI options in the BIOS are deactivated.
- The PC does not support 'software power off'. Only ATX motherboards (not AT motherboards) support this.
- ACPI support is not correctly installed.
- An application installed on the PC which is still active is preventing the PC from being switched off automatically.
- Some older motherboards have problems with ACPI support. If problems occur, make sure that you are using the most recent BIOS from the motherboard manufacturer.

In this case, check your Windows installation and the BIOS options. Sometimes it is also helpful to install the CD driver which was supplied with the motherboard. Most of these driver CDs contain Windows drivers or patches which enable Windows to carry out a 'software power off'. As a general rule, if Windows does not shut down automatically when you press Alt+F4 and choose 'Shutdown', **Nero Burning ROM 7** will not be able to shut Windows down automatically.

If you do not have administrator rights for operating systems as of Windows 2000 you cannot be authorized to shut down the PC as you do not have the necessary rights.

11.4.1 Activating automatic system shutdown

Points to note

We strongly recommend that you close all other applications when the shutdown option is activated.

The reason for this is that all open applications are closed when the system is shut down automatically. Some applications may ask, for example, if the current document should be saved. In this case, Windows will not permit **Nero Burning ROM 7** to shut down the system, because data from other applications could be lost.

How to activate automatic system shutdown

1. Create a compilation in the usual way and start the burning process.
2. In the burning process dialog box activate the check box 'Automatically shut down the PC when done'.

11.5 Verifying compilations with Nero Burning ROM 7

You can use the 'Verify' function to check whether the disc was correctly written.

11.5.1 Writing data to a CD or DVD involves more risks than writing data to a hard disk.

On the one hand, not every blank disc is compatible with every recorder. On the other hand it is possible for dirt from the atmosphere to get into a recorder, which is not sealed in the same way as the disks in a hard disk unit. The Verify option allows you to check the data you have written quickly and easily. It is particularly useful when backing up very important data. You can use the option to make sure that you can restore all the data in the event of a system crash. It would be disastrous to find out only after the system had crashed that there were faulty sectors on your backup disc or that the files had not been written correctly. If you use the **Nero Burning ROM 7** Verify function at the end of the burning process, you can be sure that the disc can be read and that all the files have been written correctly.

11.5.2 Using the Verify option

To use the Verify option, you must check the 'Verify written data' checkbox in the burning process status dialog box. This allows you to choose every time you create a disc, whether you want to check the data you have written or not.

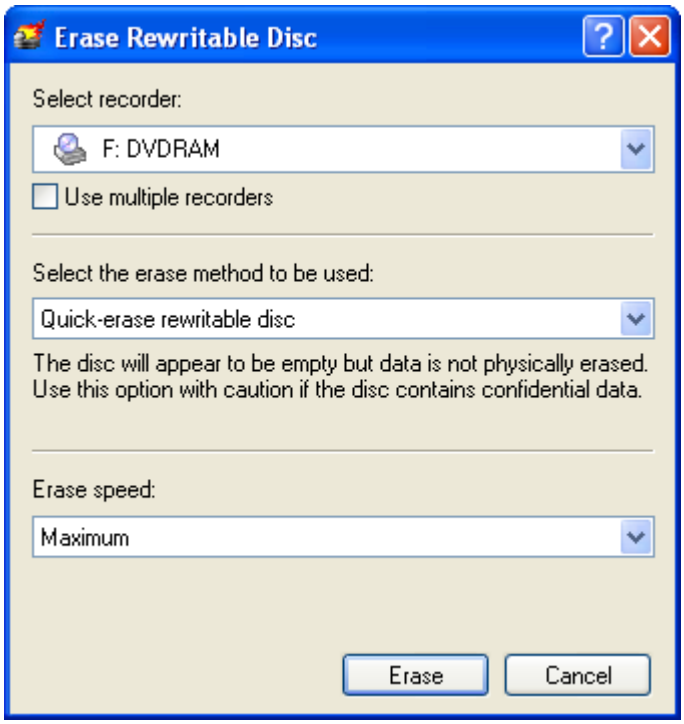
11.5.3 How the Verify option works

After the data has been written to the disc, **Nero Burning ROM 7** ejects the disc and reloads it. After this, all the files in the compilation are compared and **Nero Burning ROM 7** checks whether the files have been written correctly. In multisession compilations, **Nero Burning ROM 7** checks only those files which were written during the most recent burning process and ignores all other files. At the end of the check, **Nero Burning ROM 7** displays a summary. This contains the information from the checking process: the number of identical files, the number of different files and the number of files which could not be accessed.

11.6 Erasing data from rewritable discs

Using **Nero Burning ROM 7** you can not only create CDs and DVDs, but also erase rewritable discs (CD-RWs, DVD+RWs and DVD-RWs). However, you can only do this if you have a recorder which can also write to these types of disc.

1. From the **Recorder** menu, choose **Erase ReWritable**.
2. Click on the drop-down list and select the desired recorder or check the 'Use multiple recorders' box if all of the installed recorders are to be selected.



3. Choose the erase method you want by clicking on the button next to the pull-down list and selecting the erase method and speed.
   There are two erase methods available: 'quick-erase' and 'full-erase'.

   Quick-erase: The data is not erased fully from the disc. Only the references to the contents of the disc are deleted. The disc appears to be empty, although it is not really empty. This means that it is possible for someone else to restore the contents. Do not use this method for discs which contain confidential data. Erasing a disc using this method lasts between 1 and 2 minutes.

   Full-erase: All the data is deleted from the disc and cannot be restored. The time needed to erase a disc using this method varies depending on the type of disc.

4. Click on the 'Erase' button. The erase process starts immediately and a dialog box is displayed with information about the status of the process. When the erase process is completed, the dialog box closes and you can write new data to the rewritable disc using **Nero Burning ROM 7** or **InCD 4**.

12 FAQs

12.1 General questions about Nero Burning ROM 7

12.1.1 Can Nero Burning ROM 7 burn and copy CDs on the fly?

Yes. **Nero Burning ROM 7** can copy CDs on the fly.

1. In the 'New compilation' dialog box, click on the 'CD-Copy' icon or

   from the **'Recorder'** menu choose the **Copy Disk** item.

2. On the **Copy options** tab check the 'On the fly' checkbox. Select your CD/DVD-ROM drive as the drive with the source CD.

12.1.2 How do I create a CD image file?

To create a image file with **Nero Burning ROM 7**, you use the so-called 'Image Recorder'. You can select this recorder using the **Choose Recorder** item on the **Recorder** menu. The Image Recorder behaves in the same way as a real recorder, but writes the data into an image file instead of onto a CD/DVD. When you write a compilation using the Image Recorder, **Nero Burning ROM 7** prompts you to enter the name of the image file and then creates the file.

Please bear in mind that image files can be large. Make sure that you choose a destination drive with enough free space for the file.

If you want to burn the image file onto a CD/DVD later, we recommend that you also choose a fast drive. Network drives are not a good choice in this respect, as they also handle other users' jobs which means that they can suddenly become very slow. As a result there can be a risk, when burning a CD/DVD from an image file, of the data being sent too slowly, which may cause errors on the CD/DVD.

12.1.3 I have entered my serial number, but I cannot open Nero Burning ROM 7. Why is this?

Why is this? You probably have a demo version of **Nero Burning ROM 7** which has expired. Please contact us to obtain either a new demo version or a full version of **Nero Burning ROM 7**.

12.1.4 How can I avoid 'Buffer underrun' errors?

- Defragment your hard disk periodically.
- Close down all other programs while burning the CD. This applies in particular to programs which use a lot of processor time or memory, or which carry out a lot of hard disk accesses. The best thing to do is to close all other programs. This includes virus scanners which may be running in the background and which scan every file which is opened. Instead, you can use **Nero Burning**

ROM 7's integrated virus scanner (only available in the retail version), to ensure that there are no viruses on your CDs.

- If you are using a Notebook, make sure, before you start burning a CD, that you have switched off all the energy saving functions (e.g. hard disk shutdown, slowing down the processor speed, etc.) from the Control Panel. If the computer almost comes to a halt while burning, it will, of course, cause the burning process to fail.
- Carry out a speed test and a simulation before burning the CD.
- If you want to be completely safe, choose a lower burning speed before you start. This means that the burning process will take longer, but it does give you maximum safety.
- If you are buying a new recorder, choose one which has buffer underrun protection.

12.1.5 I can't select any language other than English.

Nero Burning ROM 7 supports more than 20 languages.

If the **Settings > Language** tab lists only one language, you can either reinstall **Nero Burning ROM 7** with the language settings you want, or you can download the appropriate language file from our website: http://www.nero.com/en/download.htm.

12.1.6 Since I installed Nero Burning ROM 7, my computer is behaving unpredictably. What is the cause of this?

Please check the following:

- If you have CD recording software other than **Nero Burning ROM 7** installed, there may be driver conflicts. For this reason, Nero AG has written a boot menu for Windows 95 and 98 users. This allows you to choose either **Nero Burning ROM 7** or another CD recording package while you are starting up the computer. You can download the boot menu from: http://www.nero.com/en/download.htm
  If your PC is running Windows Me, 2000 or XP, you cannot use the boot menu. With these operating systems, we recommend uninstalling the other CD recording package.
- IDE/ATAPI recorder: The problems may be caused by an old WinASPI driver layer. If you are a registered **Nero Burning ROM 7** user, please get in touch with Nero AG Support. Send an e-mail to techsupport@nero.com.
- IDE/ATAPI recorder: If you have installed a busmaster driver, you will find that many older busmaster IDE drivers are not compatible with recording programs.

12.1.7 I can read the CD/DVD that I have burnt in my recorder, but not in all CD/DVD-ROM drives. Why is this?

Please check whether you have burned to a rewritable disc. Rewritable discs can only be used in recorders with 'multiread'-capable drives. If you want to ensure that your CDs/DVDs can be read in any drive, use CD-Rs and not CD-RWs.

12.1.8 How do I remove the irritating 2-second pause between audio tracks?

To create an audio CD without pauses between the tracks, follow these instructions:

1. In the compilation window, select those audio tracks which you don't want a pause before.

Die Pause von 2 Sekunden vor dem ersten Audiotrack kann nicht entfernt werden. Diese Pause wird von den Audio CD-Playern nicht abgespielt, da das Abspielen von CDs immer erst nach Ende der ersten Pause beginnt.

2. From the 'Edit' menu, choose the 'Properties' item or right-click in the compilation window and then choose 'Properties' from the pop-up menu.
3. A dialog box appears in which you can set the length of the pause. Here you can enter '0' as the pause length.
4. Click on the 'OK' button to save the settings and close the dialog box.

12.1.9 The audio CDs which I have burnt have sound interference such as crackling, humming or rustling. Why is this?

Your problems are probably caused by so-called audio jitter. This is the result of fundamental hardware problems when reading audio data. You can resolve the interference problems as follows:

- read the CD more slowly or, if possible, at 1X speed, or
- select the **Nero Burning ROM 7** jitter correction function, or, if you can't resolve the problem in any other way,
- use more suitable hardware to read the audio data. This applies in particular to CD/DVD-ROM drives. It is a good idea to buy high-quality hardware from a well-known manufacturer. You may find it helpful to look at test reports in one of the many computer magazines.

12.1.10 One of the following error messages appears during the burning process. Why is this?

- **'Buffer underrun', 'Write error, padding blocks added' or 'Dummy blocks added' and sometimes also 'Logical block out of range':**

  Meaning: The memory or buffer which contains the data to be written to the CD is empty, which means that no data is being sent to the recorder. As the burning process requires a constant datastream, this means that the process has been aborted. Try using a slower writing speed and ensure that your PC is working at full speed (close down all other programs during the burning process, defragment your hard disk before you start, close down background processes such as virus scanners etc., switch off energy saving mode and screen savers, etc.)

- **'Queueing failed', 'Wait queue failed' or 'Reset occurred' or the computer hangs with ATAPI recorders.**

  Meaning: This is often caused by communications problems between the adapter and the CD recorder. With SCSI devices you can try to reduce the write speed of the adapter by switching off the 'Sync Negotiation' option and setting the transfer rate to half the maximum rate. You can normally do this in the controller BIOS. It may help to upgrade the driver software for the SCSI host adapter (that is the Miniport and WinASPI driver). You should also check that all SCSI devices are correctly terminated and that the SCSI bus is not too long. If you have an ATAPI recorder, the problem could be caused by the WinASPI drivers. It may also be that you have master/slave ATAPI settings which are incorrect or not ideal, or that the devices are not connected in the best way to the IDE bus. The best thing to do is to give the recorder its own IDE bus (there are normally two).

- **'Cannot recover from PMA', 'Cannot recover from calibration area', 'Focus or tracking error', 'Laser adjustment error', 'Monitor ATIP error', 'Power calibration error', 'Write append error', 'Write emergency occurred', 'Spindle servo failure' or 'OPC execution error'.**

  Meaning: These error messages result from unspecified hardware faults in the recorder, which do not have any obvious cause. A firmware upgrade, changing to a different make of blank CD or having the recorder repaired may all help in this case.

- **'Servo error', 'Track following error', 'Mechanical positioning error'.**

  Meaning: This may be caused by a hardware fault, or a firmware upgrade may be needed.

12.2 Context-sensitive help

Nero Burning ROM 7 has extensive context-sensitive help.

If you do not understand a software function, an option or some other part of the software, simply click on the icon in the toolbar. The mouse pointer will change to the  icon. Now click on the item which you would like help with.

You can also get help by pressing 'F1'. However, the help which appears (contrary to the Windows standard) does not refer to the entire dialog box, but only to the field with input focus in the dialog box or to the field where the mouse pointer is.

12.3 Contact

Nero Burning ROM 7 is an Nero AG product.

Nero AG
Im Stoeckmaedle 18
76307 Karlsbad
Germany

Web: http://www.nero.com
Help: http://support.nero.com/
Mail: techsupport@nero.com
Fax: +49 7248 928 499

We are happy to help with questions and problems. Please make sure that you fill out the form below. This will make it much easier for us to answer your questions quickly. Thank you in advance for your help.

Software:

- **Nero Burning ROM 7** version (all 4 digits)
- Windows version (98, 98SE, Me, Windows 2000, Windows XP)
- Windows 2000, Windows XP: the service pack version
- Any other Windows upgrades installed
- The name of any other CD recorder software installed (and any previously installed software together with the version number)

Hardware

- The names of the recorders connected to your PC and the firmware used
- The names of the CD/DVD drives
- The IDE/ATAPI drives
  Primary port – master:
  Primary port – slave:
  Secondary port – master:
  Secondary port – slave:
- The device control type for all devices: (go to Device Manager > CD-ROM/Disk drives > <<YOUR DRIVES>> > Properties > Settings)
  – DMA (if available)
  – Disconnect
  – Auto Insert Notification
- Busmaster drivers: (go to Device Manager > Hard disk controllers)
- If connected, the names of the following devices and the connection type (USB, SCSI, parallel...):
  - Scanner:
  - Printer:
  - ZIP / JAZZ drive:
  - all other externally connected devices.
- The name of the motherboard and the chipset (see the motherboard or computer manual)
- On PCs running Windows 95/98/ME: Are there any exclamation marks in the device manager and if so, where? We recommend removing these exclamation marks. Generally it helps to upgrade the drivers for the devices in question and/or to resolve all resource conflicts.
- If the error occurs during the burning process, please send us the log file which can be saved at the end of the burning process or simulation. This file will give us the basic information which we need to be able to solve the problem. Please send us the log file if you can.

The most important thing is a detailed description of the problem and of the exact steps which led up to the problem. Please remember that any piece of information, however small, which you can give us concerning your system, may help us to solve the problem more quickly.

13 Glossary

Buffer underrun

To burn a CD, there must be a continuous flow of data. If the datastream between the computer and the recorder is so small that the buffer is empty, the writing process is interrupted, as there is no data available to write to the CD.

CD-Text

As well as audio data, there is space on the CD for a wide variety of additional information, such as text describing the title and artist on each track. Currently very few audio CD players have a CD text function. If an audio CD player does not support CD text, it can play CDs with CD text in just the same way as it does "normal" audio CDs without CD text. This is possible because the additional CD text information is stored before the start of the audio data in the lead-in area of the CD.

You must have a CD recorder which supports CD text in order to be able to write CD text to a CD. You can only write CD text in DAO recording mode (disc-at-once). You can find out whether your recorder supports this feature in the **Nero Burning ROM 7** Choose Recorder dialog box.

CD EXTRA

CD EXTRA is a Blue Book standard recording format. It was previously called CD-Plus and CD-Enhanced (Enhanced CD). This format has none of the disadvantages of standard mixed mode CDs. On mixed mode CDs the first track always contains an ISO file system, which means that audio CD players cannot play the first track of this type of CD. In contrast, CD EXTRA has two sessions.

The first session contains up to 98 audio tracks conforming to the Red Book standard. The second session contains the ISO track with the ISO9660 file system and the directories CDPLUS and PICTURES. This means that CDs in CD EXTRA format can be played on both CD drives and audio CD players, as the second session cannot be "seen" by the audio CD player.

CD-i

The CD-i format (Compact Disc Interactive) was developed by Philips and Sony and is described in the Green Book. This format is particularly suited to the creation of interactive multimedia applications. These applications consist of sub-programs which can access animations and video and audio sequences. Usually special players with television screens are used to play CD-i media.

DAE

DAE is the acronym for Digital Audio Extraction. This means that the music tracks on audio CDs are read in digital format. This is also referred to as audio grabbing. Not all CD-ROM drives can read music in digital format. Generally, CD-ROM drives read music tracks in analog format (via the sound card). Using the **Nero CDSpeed** program, you can measure the DAE quality of CD drives.

Fast copying

This is a write process which does **not** involve storing the data to be written to the CD on the hard disk first. The data is written directly onto the blank CD. Another term used for fast copying is "on the fly".

Disc-at-once

This is a write process which does not create links between the individual sessions. The recorder starts by writing the lead-in, which is followed by the data and the lead-out. This process is used primarily by manufacturers of audio CDs.

Disc-at-once/96 is an extension of Disc-at-once which gives the software better control of the burning process. This mode is preferable, if it is available.

DVD

DVD stands for Digital Versatile Disc. It was originally referred to as Digital Video Disc.

The purpose of developing DVDs was to create a medium which could hold significantly more data than a CD-ROM. You can store two layers of data on each side of a DVD. The first layer can hold 4.7 GB and the second layer 3.8 GB, which means that a single-sided DVD can store 8.5 GB of data. DVDs can only be read by DVD drives, which can also read CD-ROMs. Unfortunately many DVD drives are not able to read CD-Rs. Even fewer can read CD-RWs.

Currently the following types of DVD are available:

- DVD-Audio: A high capacity audio medium.
- DVD-R: DVD-Rs can store between 3.95, 4.7 and 9.4 GB of data. In order to store 9.4 GB, you must use the second side of the DVD-R which means that you have to turn it over.
- DVD-RAM: This is a rewritable medium which can store either 2.6 GB (one layer) or 5.2 GB (two layers) of data.
- DVD-ROM: This is the data medium.
- DVD-RW: This is a rewritable DVD which can be read by almost any standard DVD-ROM drive or DVD player. DVD-RW drives can also read and write to DVDs which are not rewritable. DVD-RWs have a storage capacity of 4.7 GB. The difference between these and DVD-RAMs is that they can also be played in standard DVD-ROM drives and standalone DVD players.
- DVD+RW: This is a rewritable DVD which can be read by almost any standard DVD-ROM drive or DVD player. DVD+RW drives can also read and write to DVDs which are not rewritable. DVD+RWs have a storage capacity of 4.7 GB. The difference between these and DVD-RAMs is that they can also be played in standard DVD-ROM drives and standalone DVD players.
- DVD-Video: DVD-Videos contain full-length feature films with high audio and video quality. The videos are encoded in MPEG-2 format.

Additional information:

- The UDF (Universal Disc Format) file system is used on DVDs. However the data can also be accessed via an ISO9660 data system which is also included on the DVD.
- DVD format no longer corresponds to any of the formats specified in the colored books.

El Torito

El Torito is a specification which describes the structure of a CD used to boot a PC. A PC with a suitable BIOS can start the operating system from the CD and therefore does not need a floppy disk or a hard disk.

Finalizing

Finalizing is similar to fixing, but applies to the entire disc. No additional data can be written to a finalized disc. When you burn a CD or DVD in DAO mode, the disc is automatically finalized. However, the data on a finalized CD-RW can still be deleted (by choosing the Erase ReWritable item from the Recorder menu).

Firmware

The firmware in recorders (CD/DVD-ROM drives) functions as the operating system of the drive and contains instructions which determine how the drive reacts to commands from the computer. The firmware of the latest recorders can generally be upgraded. For example, Nero AG's website contains a page with links to the latest firmware versions. To see the firmware version of your drive, use the Choose Recorder menu item on the Recorder menu in **Nero Burning ROM 7**.

Fixing

Fixing is similar to finalizing, but applies only to an individual session rather than to the whole CD. Fixing means closing the session which has just been written, so that it can be read. To do this, the lead-in and lead-out data are written to the disc. In the current version of **Nero Burning ROM 7**, sessions are always fixed automatically.

Image file

This is a writing process which involves creating a physical image of a file. The contents of the image correspond exactly to the data which will be written to the CD.

Grabbing

Grabbing is digital audio extraction that is reading audio tracks on a CD in digital format.

Index positions

You can set index positions within an audio track. These index positions allow you to move to specific points within the track using an audio CD player. Unfortunately, very few audio CD players have the functionality which allows them to move to index positions.

Please note that index positions are not the same as the start and end of tracks. All audio CD players can move from one track to another on a CD, but very few can read and move to index positions within a track.

Hybrid CDs

A hybrid CD contains files for more than one operating system. Generally, the term hybrid CD is used to refer to CDs which can be read by PCs running Windows and by Macs. If the data is to be accessible to both operating systems, there must be two copies of it on the CD.

Lead-in

This is an area at the beginning of each session. However, it is only written to the CD when the session is completed. The lead-in contains the table of contents (TOC) of the session.

Lead-out

This is an area at the end of each session which is written at the same time as the lead-in.

m3u playlist

An m3u file contains a list of MP3 file paths. An m3u file can be created, for example, by **NeroMIX** or WinAmp. **Nero Burning ROM 7** can process m3u files, which means that when you are creating an audio CD, you simply have to drag and drop the m3u file into the audio window.

Mixed mode CDs

A mixed mode CD has one initial data track followed by audio tracks. This usually means that audio CD players cannot process the first track. If you are creating audio CDs to be played on a CD player, it is better to use the CD EXTRA format, because on this type of CD the data follows the audio tracks.

MPEG

MPEG stands for Motion Pictures Expert Group (www.mpeg.org). This international committee regulates the uniform compression of video and multimedia (video, film and audio) data. The MPEG standard now consists of MPEG-1, MPEG-2, MPEG-3 and MPEG-4. The MPEG-3 standard has now been integrated with MPEG-2.

MPEG-1

This format was developed for moving video reproduction, and has the highest compression rates. The drawback of this is that the resolution is relatively poor. Video CDs (VCDs) are encoded in MPEG-1 and can contain up to 79 minutes of film material.

MPEG-2

MPEG-2 is the successor of MPEG-1, which was known for the video CD (VCD). MPEG-2's flexible compression standards provide excellent image quality at extremely low bitrates. It is used for DVD videos and Super Video CDs (SVCDs).

The **DVD plugin** enables you to generate SVCD-compatible MPEG-2 files and burn a Super Video CD, which can contain around 40 minutes of film material. Average bitrate for an SVCD is around 2.3 Mbits per second.

With the **MPEG-2/DVD plugin,** you can create both DVD-compatible MPEG-2 files and SVCD-compatible MPEG-2 files. This means you can fit about two hours of film material on a DVD. The average bitrate for a DVD video is around 4.8 Mbits per second. Please note that you need **Nero Vision 4** and **Nero Burning ROM 7** to encode video files with the **MPEG-2/DVD plugin** and burn the DVD.

MP3 / mp3PRO

MP3 is an acronym (or file extension) for "MPEG Audio Layer 3". These are compressed audio files which can be played on a computer using an MP3 player. (MPEG stands for Motion Pictures Expert Group, which is a US standards organization responsible for full motion video standards.) MP3 was developed by the Fraunhofer Institute IIS and is restricted to audio data, in the same way as mp3PRO, which was developed by Coding Technologies.

Nero Burning ROM 7 can compress both MP3 and mp3PRO files, both of which have the file extension MP3. MP3. The quality of the signal depends on the compression rate. The standard rates are 64 kbps at 44100 Hz stereo for mp3PRO and 128 kbps at 44100 Hz stereo for MP3. During the encoding process the original WAV file is generally reduced to about 5 percent of its original size in mp3PRO format and to about 10 percent in MP3 format. The encoding process is lossy, but the psychoacoustic models remove only those parts of the audio file which are considered to be inaudible. Audible parts of an audio file can only be lost at a high compression rate.

Nero Burning ROM 7 allows you to convert 30 files into MP3 or mp3PRO format. For licensing reasons, it is not possible to convert more files. You can find both the plugins which allow unlimited encoding on Nero AG's website: Nero AG Webshop.

MP4-AAC

MP4 is an acronym (or file extension) for "MPEG Audio Layer 4". These are compressed audio files which can be played on a computer using an MP4 player.

AAC is part of the MPEG-4 standard has so far been used mainly for commercial purposes. The MPEG-4/AAC encoder works about 30% more efficiently than MP3 and has fewer problems with critical samples. This gives better quality for the same file size. Multichannel sound is also possible.

The quality of the signal depends on the compression rate. The norm with MP4 is 128 kbps at 44100 Hz, stereo. Encoding reduces the original WAV file to around 10% of its original size. The encoding process is lossy, but the psychoacoustic models remove only those parts of the audio file which are considered to be inaudible. Audible parts of an audio file can only be lost at a high compression rate.

With **Nero Burning ROM 7**, you have 30 days to convert up to 50 files into MP4 format. For licensing reasons, it is not possible to convert more files. You can find the plugin which allows unlimited encoding on Nero AG's web site: Nero AG Webshop.

Nero (Nero Claudius Caesar)

Nero was born in 37 A.D. and died in 68 A.D. He was Roman emperor from 54 to 68 A.D. He was the son of Agrippina, and was adopted by the Emperor Claudius. Seneca was appointed as **Nero**'s tutor and **Nero** was brought up by his stepfather to be his heir. In 53 A.D. he married Octavia, Claudius' daughter. The first years of his reign were relatively calm, largely due to the influence of Seneca. **Nero** respected the Senate and the existing order. Poets hailed him as the initiator of a new golden age. Later he had his mother Agrippina murdered and banished his wife who had not provided him with an heir. He became increasingly tyrannical and rid himself of his more levelheaded advisers. He made eccentric public appearances as an artist and charioteer, he prosecuted citizens for treason and after the great fire in Rome in 64 A.D. threw suspicion for having started it on the Christians. The suspicion that **Nero** himself started the fire cannot be proved, but it indicates what his citizens thought he was capable of. However, there was no real systematic persecution of Christians, since the events which took place were restricted to the city of Rome. After the failure of plot against **Nero** hatched in the Senate and lead by Piso, repression increased. Uprisings in Gaul, Spain and Africa caused the Praetorian Guard to withdraw its allegiance to **Nero**. The Guard then declared its support for Galba as emperor and the Senate declared **Nero** to be hostis populi Romani (an enemy of the Roman people), upon which he committed suicide. His death marked the end of the Julian-Claudian imperial dynasty.

On the fly

This is a write process which does **not** involve storing the data to be written to the CD on the hard disk first. The data is written directly onto the blank CD. Another term used for on the fly is "fast copying".

Packet CD / Packet writing

This is a write process which involves sending the data in blocks to the CD-RW drive without first creating an image file. The CD-RW drive is used in the same way as a hard disk or floppy disk, which means that any application can write the data to the CD. CDs created using packet writing can only be read with a special UDF driver.

PCM

PCM is the main standard for digitizing audio files and speech. PCM stands for pulse code modulation and involves digitally encoding analog signals.

Pre-gap

This is also referred to as a pause. It is the area on a CD which separates one track from another. In **Nero Burning ROM 7** the default pause is set to 2 seconds (Red Book standard).

Session

CDs are divided into tracks and sessions. A session consists of all the files which are written to the CD in the course of one write process and can consist of one or more tracks. There can be more than one session on a multisession CD.

Simulation

Simulation corresponds to the process of writing data, except that no data is written. Simulation is used to check whether the data can be sent to the recorder quickly enough to avoid a buffer underrun. It can also be used to check whether the recorder can actually write to the CD. You should use simulation when you are not sure whether the system can send the data quickly enough. If you have already burnt a few CDs successfully, you can switch off simulation. If your recorder has a buffer underrun protection function, you do not need to use simulation.

Track

On an audio CD a track corresponds to a piece of music. On a data CD a track is a unit of data which joins consecutive sectors together.

Track-at-once

This is a method of writing data which is used for multisession CDs. The CD-RW drive writes all the tracks one after another and does not end the session until this is finished.

UDF (Universal Disk Format)

This is a file system developed by OSTA (the Optical Storage Technology Association). With a UDF driver and packet writing, data can be written to a CD drive in the same way as to a hard disk or floppy disk drive.

Volume descriptor

The volume descriptor is added to every CD track. It contains information such as the creation data, the publisher, the title etc. The volume descriptor has a special significance for formats such as Video CD, Photo CD and CD-i. The volume descriptor on these types of CD includes information about the program to be used for reading the data on the CD.

Virtual Image

A virtual image is a project file which contains only references to the files which are to be written to CD.

White Book

The White Book is a standard which is more commonly called Video CD.

XSVCD (Extended Super Video CD)

XSVCD stands for Extended Super Video CD. The difference between this and SVCD is that the average bit rate can be anything up to 9.8 Mbit/s, whereas with SVCD it is 2.6 Mbit/s. Unfortunately not all drives which can read Super Video CDs support this format. In order to burn an XSVCD using **Nero Burning ROM 7**, you must deactivate the "Create standard compliant CD" checkbox on the Video CD tab.

XVCD (Extended Video CD)

XVCD stands for Extended Video CD. The difference between this and Video CD is that the bitrate can be anything up to 3.5 Mbit/s, whereas with VCD it is 1.5 Mbit/s. Unfortunately not all drives which can read Video CDs support this format. In order to burn an XVCD using **Nero Burning ROM 7**, you must deactivate the "Create standard compliant CD" checkbox on the Video CD tab.

Yellow Book

The Yellow Book is the standard for the format of CDs used for data storage. As the data must not contain any errors, additional error correction data is included. This additional error recognition and correction data is included in Mode 1. In Mode 2 this information is not included and therefore this mode is only suitable for less error-prone data such as the video files on Video CDs.