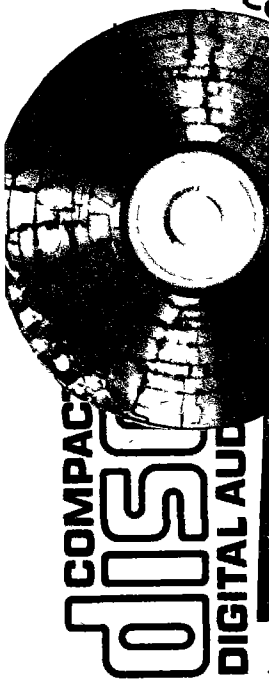
UNLOCKING OUR SOUND HERITAGE

North West HUB

ARCHIVES+

Manchester Central Library

SAVE OUR SOUNDS



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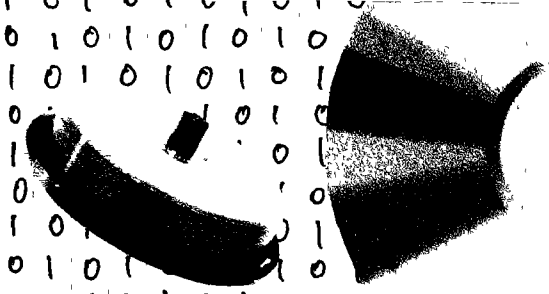
https://northwestsoundheritage.org/

AUDIO CD RIPPING GUIDE

ZINE #2

BRITISH LIBRARY

COMPACT disc DIGITAL AUDIO



COMPACT disc Recordable

HERITAGE FUND

Unlocking Our Sound Heritage

This zine guide is based on advice and materials developed by The British Library as part of the Unlocking Our Sound Heritage Project.

It suggests that you use recommended software such as 'dBpoweramp's CD ripper' (currently has a 21 day free trial - normally £32) and a recommended optical disc drive that can detect c2 errors * MORE ON THIS LATER!
eg. Asus BW-12D1S-U

This is the current best pratice suggested for galleries, libraries, archives + museums. If you're ripping audio CDs at home please don't feel discouraged! Acting now with the equipment you already have is still doing the right thing as CDs are so easily damaged and may be poorly manufactured.

If you plan to use software like iTunes select the highest quality, lossless settings:
iTunes > Preferences > General > Import Settings
WAV PCM encoded 44.1 kHz 16 bit
If it fails to rip or your quality check reattempt selecting 'use error correction when reading Audio CDs'

THE UOSH PROJECT:

Thousands of cassettes, open reels, CDs and MiniDiscs are sitting in archives, museums, libraries and in people's homes all over the UK. All kinds of unique live music, radio and conversation are recorded on these tapes and discs. We've already lost many of the people captured on them. And the British Library estimates that we have fifteen years to preserve the sounds themselves.

Unique sounds held on physical formats risk being lost as the carriers degrade over time and the equipment to play them is no longer produced. If we don't transfer the tapes from analogue to digital now we many never get the chance again.

The national project **'Unlocking Our Sound Heritage'** is supported by The National Lottery Heritage Fund and aims to save thousands of sounds which are at risk of being lost forever.

Archives+ is the hub partner for the North West region, which covers Cheshire, Cumbria, Greater Manchester, Lancashire and Merseyside. We'll be digitising 15,000 recordings on 5,000 cassettes, reels and optical discs held all over the region here at Manchester Central Library.

Unlocking Our Sound Heritage is supported by The National Lottery Heritage Fund.

https://NorthWestSoundHeritage.org/

Archives +

MANCHESTER CITY COUNCIL

QUALITY CONTROL

Playback your file and listen - spot check in 3 places if you are pushed for time.

It's about transferring as much of the audio to the highest standard with the time/equipment afforded to you.

If you've attempted every method you can to recover the audio, following the order of SECURE > INSECURE / BURST + tried an other CD drive if possible — then that's the best that you can do!

If this is part of a project, note comments like 'partial transfer' or 'includes C2 errors' in your documentation.

PRESERVATION + ACCESS

The WAV file you have created is the best representation of the original recording - it is lossless + uncompressed + should be stored (backed up in at least 2 places) on drive.

To make an access version of the file convert the WAV to MP3 (eg. using dBpoweramps Music Converter) which is the compressed version of the file that's more easy to share.

Identification **Compact Disc types**

There are two primary physical disc types: a mass-replicated, pre-recorded "Audio CD" (CD) and a Compact Disc Recordable (CD-R).

Audio CD (CD) A CD will usually have a metallic silver underside

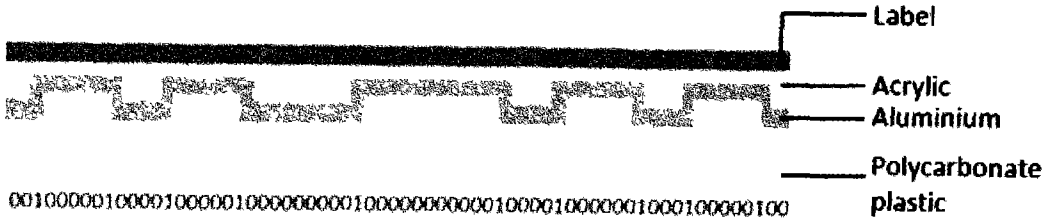


Figure 1: Audio CD structure

The data stream on a CD is pressed into the acrylic layer and coated with the reflective aluminium, in a controlled factory environment;

Compact Discs Recordable (CD-R)

CD-Rs will be a variety of different colours, due to the dyes used,

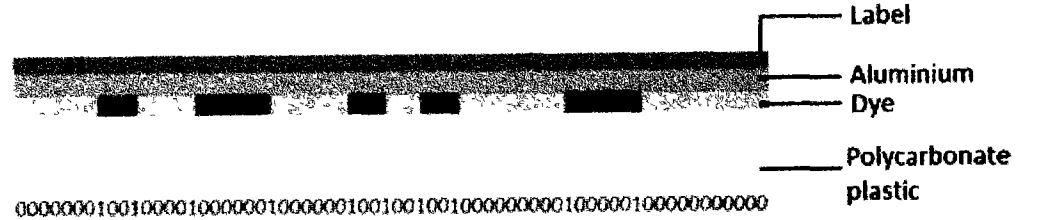


Figure 2. CD-R structure

A CD-R has a similar construction to a CD, but instead of a pressed aluminium/acrylic core, the data is written to the disc by changing the reflective properties of a photosensitive dye layer. The dye is "burnt" in an off-the-shelf CD-writer, turning sectors opaque in sequence with the data stream.

The Compact Disc is a digital optical storage format; data is encoded as a stream of binary digits, read by a laser beam in an optical disc drive. The accuracy of the data transmitted during capture is heavily influenced by the quality of data written to the disc, its physical condition and the reliability of the optical drive.

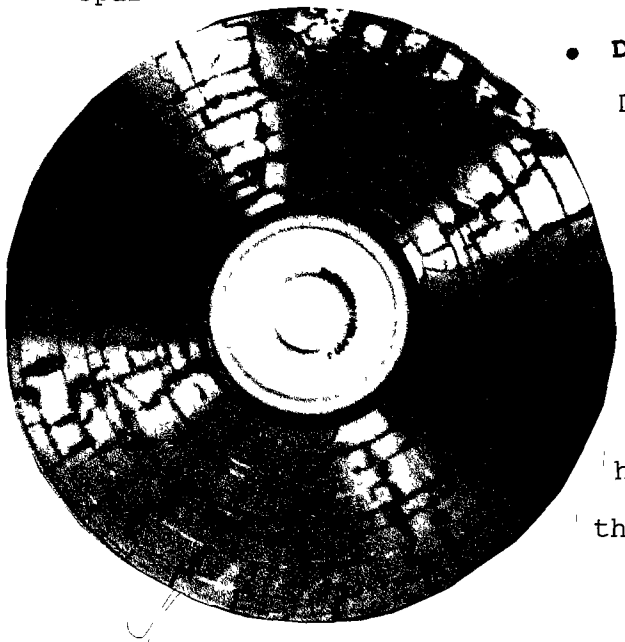
Risk factors

- **CD label stickers.**

The glue in the CD label stickers can damage the CD.

- **Low quality media.**

The shelf life of the CD-R varies greatly depending on the manufacturer. Some Discs lose reflectivity and become almost transparent and unreadable.

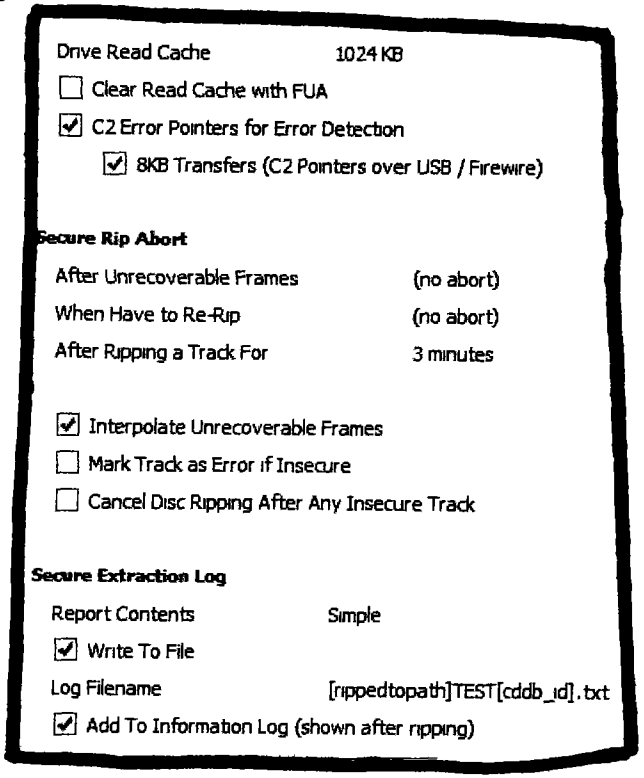


- **Disc handling.**

Discs can be easily mishandled which results in scratches and cracks. In a small number of cases cleaning the Disc helped to recover the data.

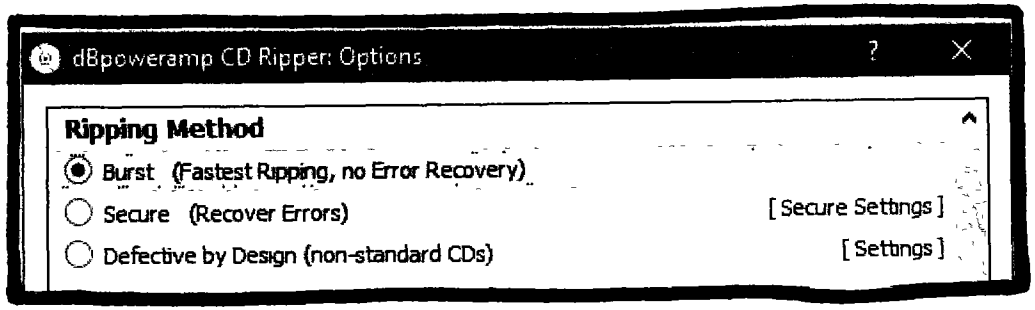
2 "INSECURE RIP PROFILE":

This profile will attempt to interpolate uncorrectable C2 errors and will produce a detailed log of the errors encountered. As this process might be lengthy, insecure profile limits the rip time to 4 minutes per track.



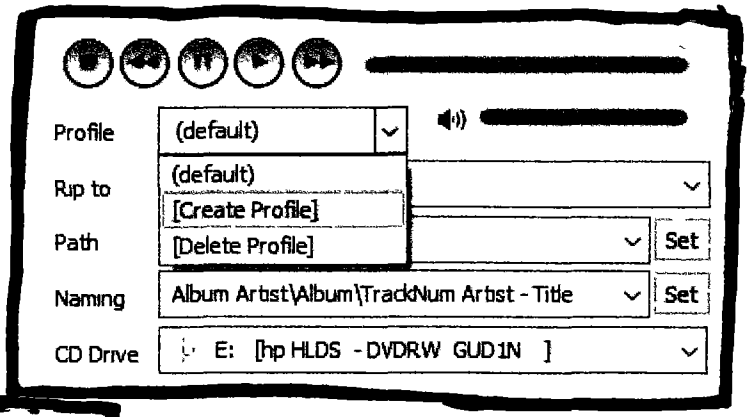
3 Burst profile:

If both secure and insecure rips have failed, the burst ripping method might be the only option to recover the audio.



dBpoweramp settings

dBpoweramp allows to define multiple settings profiles and switch between them. set up 3 different profiles and start with the "secure rip" moving to the "insecure rip" and "burst mode" profiles in case the rip fails.



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Secure rip profile:

Drive Read Cache 1024 KB [Detect]

☐ Clear Read Cache with FUA [Test FUA Support]

☑ C2 Error Pointers for Error Detection [Detect C2 Support]

☑ 8KB Transfers (C2 Pointers over USB / Firewire)

Secure Rip Abort

After Unrecoverable Frames 1

When Have to Re-Rip 100

After Ripping a Track For 10

☐ Interpolate Unrecoverable Frames

☐ Mark Track as Error if Insecure

☑ Cancel Disc Ripping After Any Insecure Track

Secure Extraction Log

Report Contents Simple

☑ Write To File

Log Filename [rippedtopath]TEST[cddb_id].txt

☑ Add To Information Log (shown after ripping)

This profile will make sure the disc is ripped error free. It will produce the log confirming that no C2 errors were detected. The rip process will be aborted in case an uncorrectable C2 error is detected.

Disc Preparation

- **Writing on the Disc.**

Writing on the CD (including with "CD pens") is not recommended and can damage the Disc, as the CD-R dye layer, where the data is encoded, is located underneath the label layer. In extreme cases the writing can be seen even from the reflective side of the Disc.

If a disc already has a label affixed to the surface, then it should not be removed as any remedial action has the potential to damage the disc further.

Discs should be cleaned of any stains or marks (finger prints etc.) using a microfiber cloth - wiping the disc's surface radially, from the centre to outer edge.

Avoid wiping around the disc in a circular motion, as this follows the data track and is likely to damage a contiguous number of bits (resulting in a large number of errors), if something gets under the cloth.

Choosing a CD drive

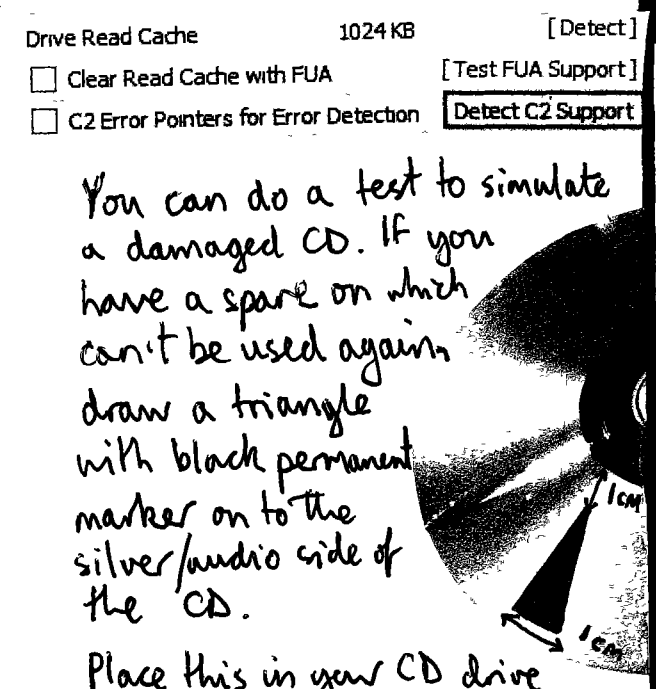
Every year dBpoweramp collate a list of it's users best + worst performing drives.
To see that list go here:

forum.dbpoweramp.com/showthread.php?43786-CD-Drive-Accuracy-2019

The best list includes some models from Asus, Panasonic, Pioneer + Plextor.

Check your drive reports C2 errors

C2 error pointers tell CD Ripper when a section of audio has 'un-correctable errors'



You can do a test to simulate a damaged CD. If you have a spare on which can't be used again, draw a triangle with black permanent marker on to the silver/audio side of the CD.

Place this in your CD drive and click 'Detect C2 Support' The errors from this test should be detected about 1/4 of the way through the test. C2 errors at the very start of the test would signal that the drive is not compatible.