PROFESSIONAL RECORDING MEDIA

DEPENDABLE, HIGH-PERFORMANCE MEDIA FOR CRITICAL RECORDING APPLICATIONS

COMPACT disc Recordable ReWritable · DVD R · DVD RW · RW DVD+R · DVD RAM · MO REWRITABLE MAGNETO OPTICAL DISK · Mini Disc · DAT Digital Audio Tape · adat · DTRS DIGITAL TAPE RECORDING SYSTEM

CD-R

SPECIFICALLY DEVELOPED FOR PROFESSIONAL AUDIO RECORDING

HHB CD-R and CD-RW media is the first choice of audio professionals worldwide. In a market saturated with high-speed data recording media, HHB discs are optimised for the lower recording speeds used in audio CD recorders and duplicators, ensuring the integrity of the recorded data.

Our CD-R discs have been recently upgraded to offer multiple benefits to the user. Designed specifically for use in 1X to 24X writers and delivering consistently low block error rates and low jitter in professional audio applications, the discs also improve economy by reducing the operating stress on the lower-power lasers in audio CD recorders.

The HHB CD-R Gold 1X to 8X disc employs the original recipe of a specially formulated phthalocyanine dye offering increased protection from UV light, while our CD-RW disc incorporates a highly sensitive In-Ag-Sb-Te phase-change material, delivering in excess of 1000 erase/record cycles. Compatibility with a huge range of recorders and players is assured by the absolute purity of the reflective recording layer, and all discs are protected from damage by a durable lacquer coating.

CDR80

79 minutes 59 seconds, 700MB disc. HHB-branded and packed in a jewel case.

- Advanced Phthalocyanine dyes (CD-R) and In-Ag-Sb-Te phase-change material (CD-RW)
- Optimised for the lower speeds used in audio recorders
- High reflectivity for compatibility with a wide range of players
- Consistently low block error rates
- Ultra-low jitter performance
- Secure archival life in excess of 200 years (100 years for CD-RW and CD-R Gold)
- Full conformity with Orange Book Part II (CD-R) and Part III Version 2.0 (CD-RW)
- Tough protective coating
- For critical audio and data recording applications

CDR80IP

Printable version of the CDR80 optimised for inkjet printers. 79 minutes 59 seconds, 700MB, 1X - 24X, packed in a jewel case.

CDR74

74 minutes 4 seconds, 1X - 24X, 650MB, HHB-branded and packed in a jewel case.

CDR80BulkIP

50 disc Cake Pack of 1X - 24X inkjet printable 79 minute 59 seconds, 700MB discs.

CDR80BulkThermal

50 disc Cake Pack of 1X - 24X thermal printable 79 minute 59 seconds, 700MB discs.

CDR74Gold

The original HHB audio-optimised disc. 74 minutes 4 seconds, 650MB, 1X - 8X and packed in a jewel case.

CDRW80

79 minutes 59 seconds, 700MB, 1X - 4X rewritable disc. Packed in a jewel case.

TECHNICAL DATA

Recording time (CDR80 & CDRW80)	79 minutes 59 seconds
Recording time (CDR74 & CDR74 Gold)	74 minutes 4 seconds
Capacity (CDR80 & CDRW80)	700MB
Capacity (CDR74 & CDR74 Gold)	650MB
Recommended recording speeds (CDR80 & CDR74)	1X to 24X
Recommended recording speeds (CDR74 Gold)	1X to 8X
Recommended recording speeds (CDRW80)	1X to 4X
Recording material (CD-R)	Phthalocyanine stable organic dye
Recording material (CDRW80)	In-Ag-Sb-Te phase-change material
Protecting material	UV resin
Substrate (CDRW80)	Polycarbonate
Reflection ratio (CDR80 & CDR74)	> 68%
Reflection ratio (CDR74 Gold)	> 72%
Reflection ratio (CDRW80)	15 to 25%
Track pitch (CDR80 & CDR74)	1.49µm to 1.70µm
Track pitch (CDR74 Gold)	1.6µm ± 0.1µm
Track pitch (CDRW80)	1.55µm ± 0.1µm
Track eccentricity (CDR80, CDR74, CDRW80)	< 50µm
Track eccentricity (CDR74 Gold)	< 35µm
Block error rate (average) (CDR80 & CDR74)	< 50
Block error rate (average) (CDR74 Gold)	< 25
Secure archival life (CDR80 & CDR74)	> 200 years
Secure archival life (CDR74 Gold & CDRW80)	> 100 years
Operating temperature	-5 to 55°C (23 to 131°F)
Operating humidity	5 to 95% RH

DVD-R

MAXIMUM SECURITY FOR AUDIO, VIDEO AND DATA RECORDING

With the continued growth of the DVD market, HHB's range of DVD write once and rewritable media guarantees a professional recording solution for any audio, video or data application.

With a disc to cover all popular DVD-R and DVD-RW formats, HHB DVD media uses a unique, specially licensed dye formulation to deliver unparalleled data integrity and compatibility with the widest possible range of 1X-4X recorders and players. A specially developed adhesive is used to ensure a durable, bubble-free bond between the two polycarbonate layers of the disc, improving the archival security of the data and providing a higher level of protection from rough handling than conventional DVD-R media. Critically, the diameter and edge profile of the disc hub has been optimised for smooth handling by automated duplication and printing systems to ensure smooth workflow, and a new brilliant white printable surface dries quickly, removing the need for a stacking ring to separate printed discs.

- High performance DVD write once and rewritable discs
- Advanced dye formulation for increased data integrity
- Compatible with a wide range of recorders and players
- Consistently low block error rates and ultra-low jitter
- Brilliant white, quick dry printable surfaces
- Shape optimised for smooth workflow in automated systems
- Packed in library cases (except BULK)
- Secure archival life in excess of 50 years

DVD-R4.7GB-G

4.7GB General Type DVD-R disc for use in a wide range of recorders. Inkjet printable disc surface.

DVD-R4.7GB-A

4.7GB Authoring Type DVD-R disc for use in Authoring drives only. Inkjet printable disc surface.

DVD+R4.7GB-Plus

4.7GB write once disc conforming to the DVD+R format. Inkjet printable disc surface.

DVD-RW4.7GB-Minus

4.7GB rewritable disc conforming to the DVD-RW format. Inkjet printable disc surface.

HHB CD WRITER

Containing a specially formulated ink which dries in a fraction of a second, the HHB CD Writer permits smudge-free writing directly onto CD-Rs and DVD-Rs.

DVD-R4.7GB-GBulkIP

50 disc Cake Pack of General Type DVD-R discs. Inkjet printable surfaces.

DVD-R4.7GB-GBulkThermal

50 disc Cake Pack of General Type DVD-R discs. Thermal printable surfaces.

TECHNICAL DATA

DVD-R (General and Authoring)

Disc type (DVD-R4.7GB-G)	Recordable DVD - General type version 2
Disc type (DVD-R4.7GB-A)	Recordable DVD - Authoring type
Capacity (unformatted)	4.7GB
Recording wavelength (DVD-R4.7GB-G)	650nm ± 5nm
Recording wavelength (DVD-R4.7GB-A)	635nm ± 5nm
Bytes / sector	2048 + 12 header data
Track pitch	0.74µm
Substrate material	Polycarbonate
Secure archival life	> 50 years
Operating temperature	-5 to 55°C (-23 to 131°F)
Operating humidity	3 to 95% RH

DVD-RW

Disc type	Rewritable DVD
Capacity (unformatted)	4.7GB
Recording format	Phase change CLV
Recording wavelength	650nm
Track pitch	0.74µm
Substrate material	Polycarbonate
Erase / write / read cycles	> 10^3
Secure archival life	> 50 years
Operating temperature	-5 to 55°C (-23 to 131°F)
Operating humidity	3 to 95% RH

DVD-RAM

DEPENDABLE BACK - UP FOR YOUR DESKTOP AUDIO AND VIDEO PRODUCTIONS

Audio and video workstation users are increasingly turning to DVD-RAM as a durable, rewritable and high-capacity solution for critical recording and back-up tasks. HHB offers a choice of two high performance discs - 4.7GB (single sided) and 9.4GB (double sided).

A precision In-Ag-Sb-Te sputtered recording layer ensures 100,000 erase/read/write cycles and a durable top coating material delivers a secure archival life in excess of 100 years.

- 4.7GB and 9.4GB discs available
- FLLC A Class laboratory certified
- In-Ag-Sb-Te phase change recording material
- 100,000 erase/record cycles
- Consistently low block error rates
- Durable, shatterproof cartridge

DVD-RAM4.7GB / **DVD-RAM**9.4GB

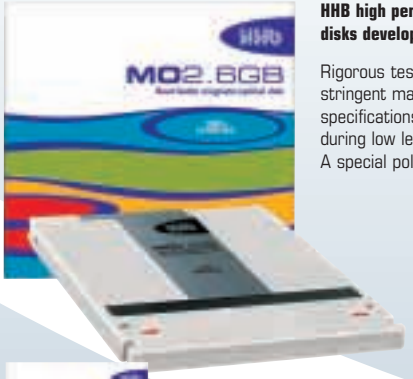
4.7GB single-sided and
9.4GB double-sided DVD-RAM discs.

TECHNICAL DATA

Disc type	Phase-change rewritable
Capacity (unformatted)	4.7GB / 9.4GB
Cartridge type	Type 2 / Type 4
Bytes / sector	2048
Sectors / track	25 to 59 (ZCLV)
Block size	32KB
Tracks / surface	56087 tracks
Track pitch	0.615µm
Substrate material	Polycarbonate
Erase / write / read cycles	> 10^5
Secure archival life	> 100 years
Operating temperature	5 to 60°C (41 to 140°F)
Operating humidity	3 to 85%

MO

100% CERTIFIED FOR HI-RESOLUTION PROFESSIONAL AUDIO RECORDING



HHB high performance 5.25" MO disks are the world's first and only Magneto Optical disks developed specifically for hi-bit, hi-sampling professional audio recording.

Rigorous testing procedures ensure that the numbers of bad sectors are below a very stringent maximum, which is a small percentage of that allowed within the MO format specifications. Bad sectors are identified and noted in a Primary Defect List (PDL) during low level formatting, resulting in high data transfer rates when writing.
A special polycarbonate disk substrate ensures reliability under demanding conditions.

- 2.6 and 5.25GB 5.25" MO disks
- 100% certified for sustained high speed data transfer
- Ultra-stable recording layer with high carrier to noise ratio
- 10,000,000 erase/write/read cycles
- 100 year lifetime warranty

MO2.6GB / **MO**5.2GB

2.6GB and 5.2GB, 5.25" MO disks.
Optimised for hi-bit audio recording and 100% certified for sustained high speed data transfer.

TECHNICAL DATA

Capacity	2.6 & 5.2GB
Bytes / sector	1024 & 2048
Format	ISO/IEC 14517 & ISO/IEC-FCD15286
Erase / write / read cycles	> 10^7
Carrier to noise ratio	> 45dB
Error rate	< 10^{-8}
Secure archival life	> 100 years
Operating temperature	5 to 55°C (41 to 131°F)
Operating humidity	3 to 85% RH

MINIDISC

PRO MD MEDIA WITH ERROR RATES TEN TIMES LOWER THAN CONSUMER DISCS

Specially developed for professional studio and location recording, and broadcast use, HHB MiniDiscs exceed Rainbow Book specifications and exhibit block error rates ten times lower than consumer MD media.

With extended recording times of 74 minutes 59 seconds and 80 minutes 59 seconds, HHB MiniDiscs use an advanced thin film sputtering technology to apply recording, dielectric and reflective layers to a polycarbonate substrate, which is protected by a tough UV coating. The precision manufactured stamper ensures consistently accurate tracking for every disc and a special lubricating agent results in the best possible recording head contact. A durable shell combines with a foil shutter assembly to protect the disc from contamination.

HHB's MDD140 has been specifically designed for use in multitrack recorders incorporating the MD Data format (including models from Sony, Yamaha and Tascam).

The MDD140 excels in the critical areas of low block error rates and high carrier to noise ratio. Magnetic field modulation direct over write is used to record new data which markedly increases write speeds and achieves 100,000 read/write cycles. Please note that the MDD140 will not work in conventional MiniDisc recorders.

MiniDisc

- 74 min 59 sec and 80 min 59 sec professional audio MiniDiscs
- Block error rates 10 times lower than consumer media
- 1,000,000 read/write cycles
- UV coating protects discs
- Lubricating agent gives optimum contact with recording head
- Durable shell and foil shutter assembly
- Secure archival life in excess of 50 years

MiniDisc Data

- Developed specifically for use in multitrack recorders using the MD Data format
- Low block error rates
- High carrier to noise ratio
- 100,000 read/write cycles
- Secure archival life in excess of 10 years

MD74

74 min 59 sec professional MiniDisc.
Secure archival life of 50 years.

MD80

80 min 59 sec professional MiniDisc.
Secure archival life of 50 years.

MDD140

140MB data format MiniDisc for use in multi-track recorders. Secure archival life of 10 years.

TECHNICAL DATA

MD74 & MD80

Recording time	74 mins 59 secs & 80 mins 59 secs
Block error rate (average)	1.3 x 10^{-4}
Disc diameter	64.8mm ± 0.2mm
Disc thickness	1.2mm ± 0.1mm
Track pitch	MD74 1.60µm ± 0.1µm
Track pitch	MD80 1.52µm ± 0.1µm
Write / read cycles	> 10^6
Secure archival life	> 50 years
Operating temperature	-25 to 70°C (-13 to 158°F)
Operating humidity	10 to 95% RH

TECHNICAL DATA

MDD140

Capacity	140MB
Carrier to noise ratio	> 47dB
Block error rate (average)	< 6.8 x 10^{-3}
Disc diameter	64mm ± 0.5mm
Disc thickness	1.2mm ± 0.1mm
Track pitch	1.60 ± 0.1µm
Write / read cycles	> 10^5
Secure archival life	> 10 years
Operating temperature	-25 to 70°C (-13 to 158°F)
Operating humidity	10 to 95% RH

WARNING ALL DISCS ARE NOT THE SAME

Developed specifically for professional audio recording, HHB MiniDiscs have block error rates ten times lower than consumer MD media. And in CD-R, HHB discs are designed specifically for use in audio CD recorders and duplicators.

Most CD-R media manufacturers develop discs primarily for data recording in high-speed computer drives and these can cause problems in the lower speed drives used in stand-alone audio CD recorders, even shortening the life of the laser.

DAT

INDEPENDENTLY PROVEN TO BE THE HIGHEST PERFORMING DAT TAPE

HHB DAT tape (the first format in the HHB Professional Recording Media Range) played an important role in pioneering the professional acceptance of the format which remains in widespread use both on location and in the studio. Today our DAT range remains the most comprehensive and most dependable on the market.

HHB DAT uses an ultra-fine, high-density metal particle recording layer which delivers high output and retentivity. A specially formulated binder system combines with a durable back coating to ensure consistently low block error rates,

- Independently proven to be the most dependable brand of DAT tape
- High performance DAT tape available in 6 convenient lengths
- Ultra-fine, high-density metal particle recording layer
- High output
- High retentivity
- Advanced binder formulation keeps block errors low
- Flexible film base minimises head wear

even after multiple passes and prolonged high speed shuttling. The flexibility of the base film allows a better head wrap, resulting in less head wear.

The rigid shell is capable of withstanding a temperature of 107°C (224.6°F) without warping, and the anti-static lid discharges quickly, avoiding damaging build ups of dust. Attention to detail is retained even down to the hub braking system which is improved to create a more efficient braking action, reducing tape slack when ejecting.

- Rigid, heat resistant shell improves tape handling
- Anti-static lid resists dust build up
- Advanced hub lock assembly improves braking action, reduces tape slack when ejecting and hence improves tape pack
- Shatterproof polypropylene cases
- Secure archival life in excess of 30 years

DAT15, 35, 50, 65, 95, 125

15 to 125 minute DATs. Packed in shatterproof polypropylene cases.

TECHNICAL DATA

Recording times	15, 35, 50, 65, 95 & 125 mins
Block error rate (average)	$< 5 \times 10^{-4}$
Retentivity	250mT - 2500 Gauss
Coercivity	121 kA/m - 1520 Oe
Surface resistance	Mag layer 2 x 10^{10} Ω/sq
	Back coating 2 x 10^{4} Ω/sq
Tape thickness (total)	13µm
Secure archival life	> 30 years
Operating temperature	5 to 55°C (41 to 131°F)
Operating humidity	5 to 95% RH

MORE THAN 4 MILLION HHB DAT TAPES SOLD

Having played a pivotal role in pioneering the acceptance of DAT as a professional recording format, it was DAT that first alerted HHB to the need for dependable, high-quality media, specifically developed for professional recording applications. Since its introduction in 1993, more than 4 million HHB DAT tapes have been sold.

Today, the HHB Professional Recording Media range encompasses all popular tape and disc-based formats, staying true to the original principle of offering professional users the highest possible standards of performance, dependability and long term archival security.

ADAT

SPECIALLY FORMULATED AND ALESIS - APPROVED FOR MULTITRACK RECORDING

ADAT45

45 minute Alesis approved ADAT tape in a cardboard sleeve.

ADAT60L

60 minute Alesis approved ADAT tape in a library case.

HHB ADAT tape has been carefully designed to withstand the high stress conditions it faces in the S-VHS transport system.

A new, back coated tape delivers repeatedly low block error rates and enhanced archival security. The shell is precision manufactured from impact resistant ABS which ensures accurate tape handling and minimises the tape pack slack that can cause inferior tapes to break. And, with true HHB attention to detail, the record protect system is of the sliding tab type as opposed to the snap-out tab common on conventional ADAT tapes.

- Approved by Alesis for ADAT multitrack recording
- Back coated for smoother tape handling
- Ultra-fine metal particle magnetic layer
- Advanced binder stops oxide shedding
- ABS shell with sliding record protect tab
- Secure archival life in excess of 30 years

TECHNICAL DATA

Recording time	45 & 60 minutes
Coercivity	64 kA/m - 800 Oersted
Retentivity	159 mT - 1500 Gauss
Block error rate (average)	$< 0.7 \times 10^{-6}$
Tape thickness	18.7µm (45) 14.5µm (60)
Yield strength	40N (45) 30N (60)
Secure archival life	> 30 years
Operating temperature	15 to 25°C (59 to 77°F)
Operating humidity	40 to 60% RH

DTRS

TASCAM - APPROVED DOUBLE COATED TAPE FOR HI-RESOLUTION AUDIO RECORDING

DA30DC / DA60DC / DA113DC

Double coated, Tascam approved 30/60/113 minute DTRS tape. Packed in a library case.

HHB DTRS tape is double coated for exceptionally high output, increased carrier to noise ratio and the low block error rates necessary to avoid the interpolation and muting systems that inevitably come into effect when data cannot be correctly retrieved from conventional Hi8 media, particularly in 24-bit/96kHz applications.

All tapes are officially approved by Tascam for use with their DTRS recorders. The tape base is coated with an ultra-thin layer of metal magnetic particles over a layer of fine non-magnetic particles which contains a lubricant for smooth running of the tape during use. A rugged binder enhances durability and the back coating substrate minimises friction during high speed shuttling.

- Approved by Tascam for all DTRS recording applications
- Double coated for high output and low block error rates
- Advanced binder compound for increased durability
- Rigid, heat resistant shell
- Secure archival life in excess of 10 years

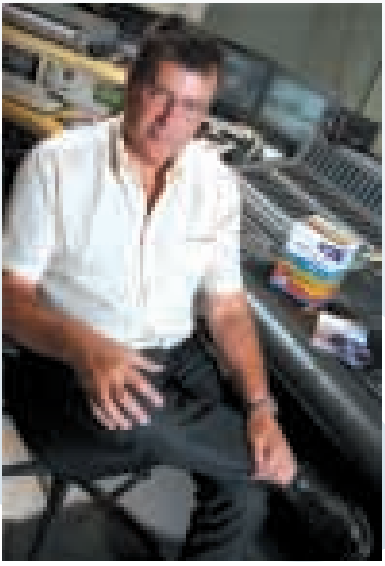
TECHNICAL DATA

Recording time	30, 60 & 113 minutes
Tape thickness	10.8µm
Width	8.0mm
Yield strength	15N (1.5kg)
Residual elongation	< 0.2%
Intrinsic coercivity (Hc)	155 kA/m - 1950 Oe
Retentivity (Br)	320mT - 3200 Gauss
Secure archival life	> 10 years
Operating temperature	5 to 55°C (41 to 131°F)
Operating humidity	5 to 95% RH

FOR THE HIGHEST LEVELS OF PERFORMANCE AND LONG TERM ARCHIVAL SECURITY, PROFESSIONAL USERS WORLDWIDE DEPEND ON HHB RECORDING MEDIA.

"HHB discs are the best I've used. It's nice to know that when I write a CD on an HHB disc, it'll play back on any machine I use."

Mike Hedges, Producer,
U2, Travis, The Cure,
Manic Street Preachers



"At Grand Central, we create sound for TV, cinema and radio commercials. Our clients include most of the world's leading advertising agencies so we have to use the world's most reliable recording media. That's why we use HHB."

Ivor Taylor, Finance and Technical Director,
Grand Central Studios, London

HHB Communications Ltd
T 020 8962 5000 **E** sales@hhb.co.uk **W** www.hhb.co.uk
HHB Communications USA Inc
T 805 579 6490 **E** sales@hhbusa.com **W** www.hhbusa.com
HHB Communications Canada Ltd
T 416 867 9000 **E** sales@hhbcanada.com **W** www.hhbcanada.com

HHB

FIRST WE LISTEN