



Archiving and Migration Solutions

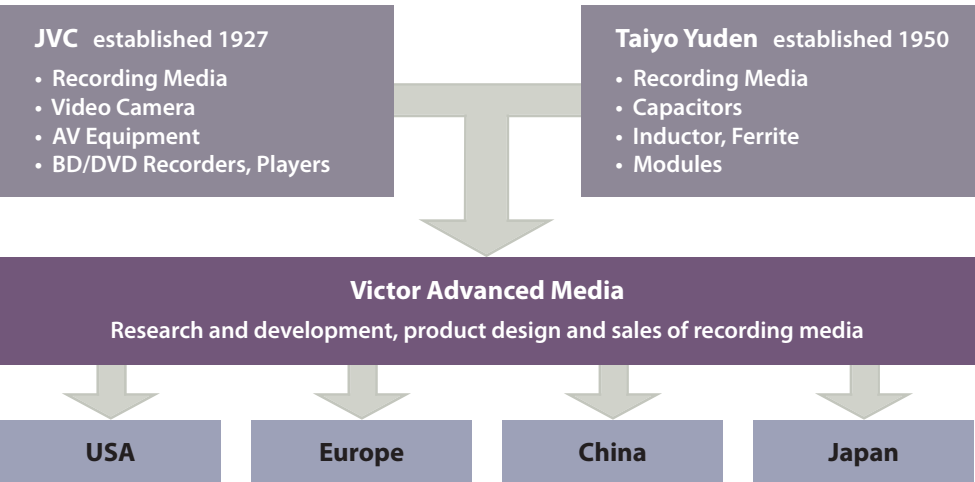
for Optical Discs



Made in Japan

Company Introduction

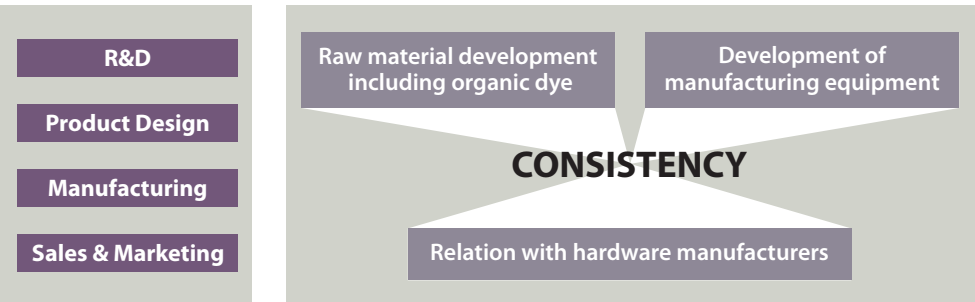
JVC Advanced Media is a sales subsidiary owned by Victor Advanced Media, which is a joint-venture company owned by Taiyo Yuden Co., Ltd and Victor Company of Japan, Limited.



Strength of Victor Advanced Media

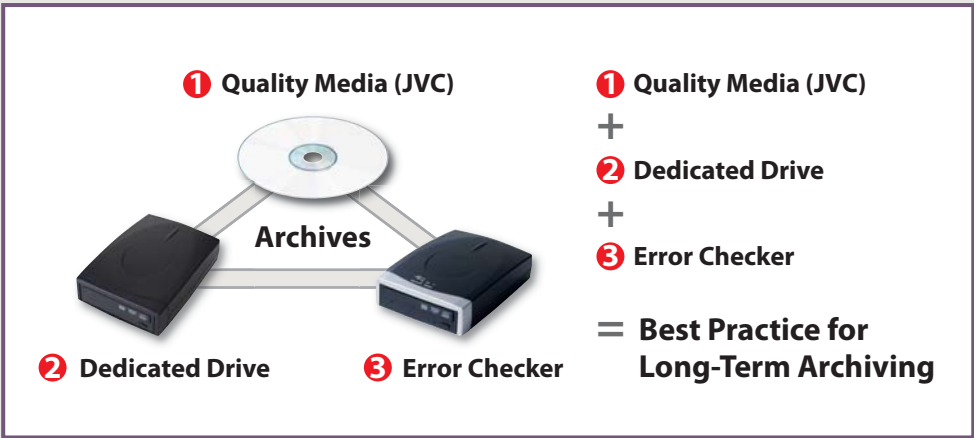
- Taiyo Yuden is the inventor of CD-R and holds many patents related to optical discs.
- JVC has supplied the market high quality recording media solutions since the use of tape.

Unlike other manufacturers, Victor Advanced Media can control all aspects of its manufacturing, such as raw material development. Victor Advanced Media designs our own manufacturing process and controls new technology developments. We continue to offer the market high quality products by using our proven technologies and strength advantages.



Products from Victor Advanced Media are highly appreciated by professional users because of proven high stability and unmatched quality.

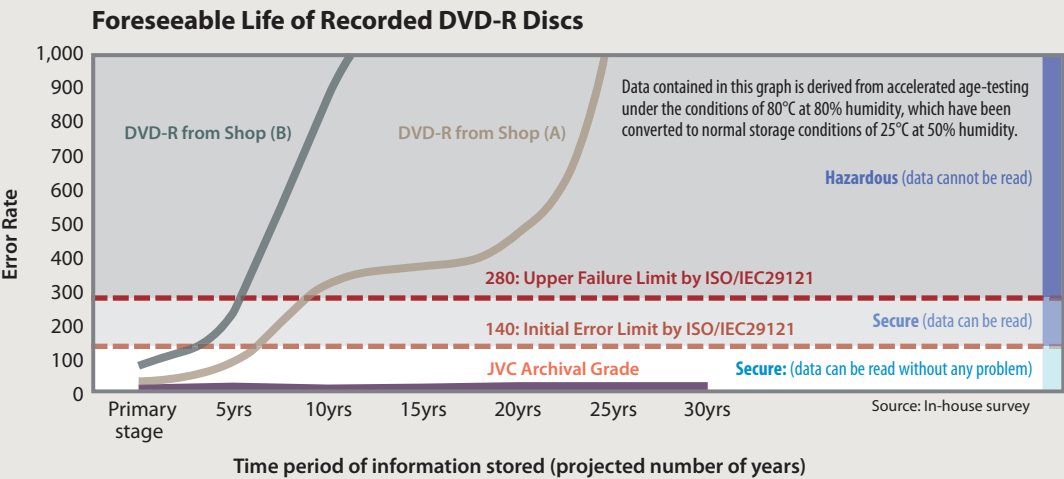
Key to Long Term Archiving



For long term archiving with optical disc, the challenge is always “**media has to be recorded properly**”. It goes without saying that the media quality must be suitable for long term archiving. It also requires the use of the proper drives to record data properly and to maximize writing quality. Until now it has been difficult to properly

validate archival standards and related operation due to the lack of a common system solution and no standards in the market that define the “rule” that has to be followed by those who need to retain the important data on optical discs. The initial writing error rate has a direct impact on the length of archival lifetime.

The knowledge of an ISO standard for operations is not widely known in the market. The ISO standard, **ISO/IEC29121**, defines the migration timing and a safe level of error rate at the time of writing and during storage.



JVC Archival Grade DVD-R

In response to strong demand from archivists, government agencies and service providers for a recording medium that will retain important data to the highest possible standard, JVC Advanced Media, the world's leading manufacturer of optical discs, developed "Archival Grade DVD-R".

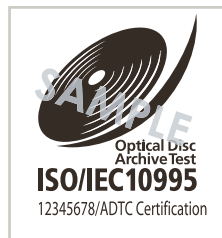
This coupled with the fact that there is no worldwide standard that defines the test

method to estimate the longevity of optical discs, has caused many misunderstandings in this industry regarding archival grade products. JVC Advanced Media has now introduced the world's first DVD-R in compliance with **ISO/IEC10995**, the industry standard that defines the test method for estimating DVD-R longevity.

Our Archival Grade DVD-R passed ISO/IEC10995 test

Optical disc manufacturers have been claiming archival lifetime based on the result of testing performed without the clearly stated critical test details or important factors for long term archiving. **ISO/IEC10995** test is a very reliable and stringent test method. This method takes fluctuation in disc quality into consideration and eliminates factors unrelated to longevity estimation. The ordinary test method that most manufacturers use is

to take a simply average value in each test conditions for the estimation. As a result, claims of longevity vary from 30-100 years. This simple average creates a probability that 50% of the result is below the average. **ISO/IEC10995** test does not define the length of longevity, however it says 95% of the discs have to survive for over 30 years at the condition of 25°C and 50% relative humidity.



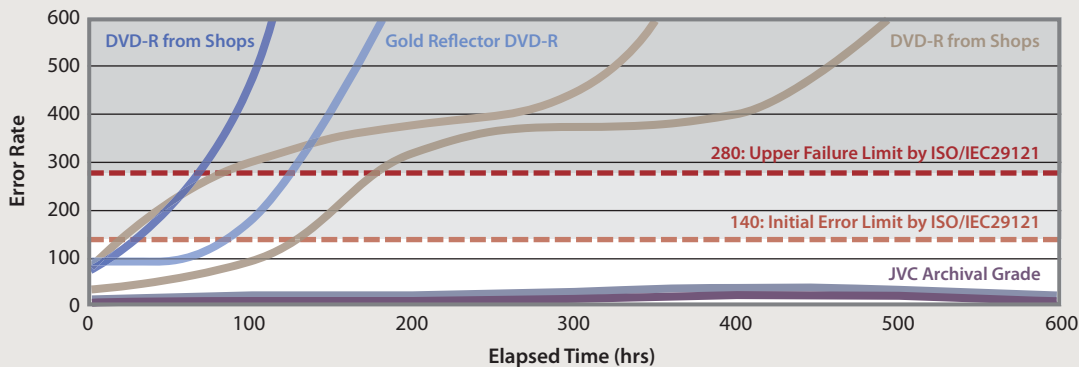
Our Archival Grade DVD-R is fully tested **by an independent test laboratory called ADTC-N** in Japan. The test is conducted using the international standard ISO/IEC10995. The certified results for our products depict an archival life of **more than 30 years**. The logo is given to the products by ADTC to properly certify these results. All the users can choose the proper products for long term archiving by looking at the logo affixed to the products.

Unique Features of JVC Archive Grade

Archival lifetime could be affected by the storage capability of DVD-R. It goes without saying that rigorous specifications for the electrical and mechanical characteristics of

the DVD-R are important, but the raw materials used for the DVD-R, such as reflective layer and organic dye, are also vital.

DVD-R Stress Test (80 °C/85 % RH)



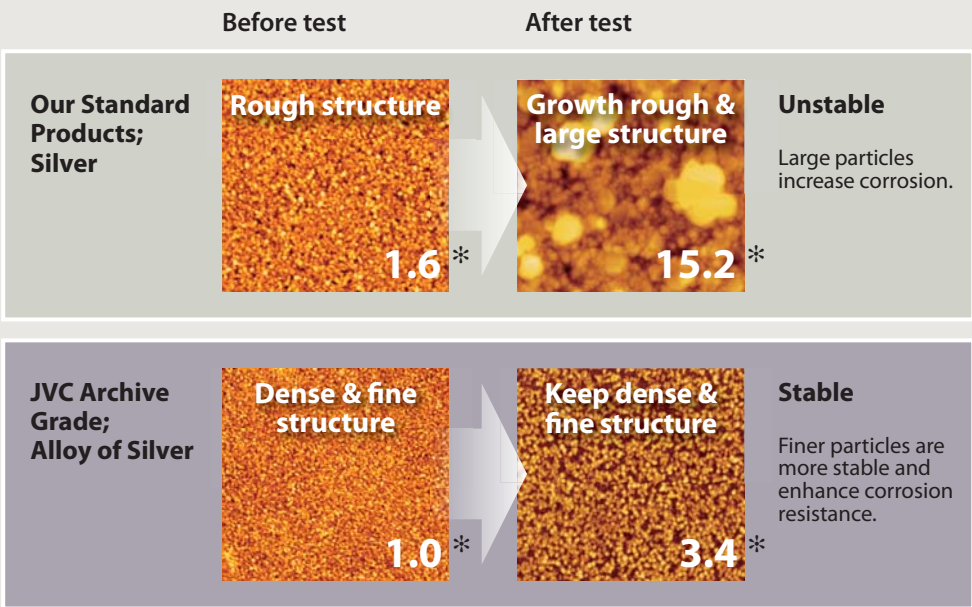
“Special Silver Alloy” is employed on the reflective layer

As you know, there are existing DVD-R discs that employ “gold” on the reflective layer. Its purpose is to minimize the degradation of the layer during long-term storage. However, generally speaking, reflectivity (an important parameter for writing process) on gold is lower than that of silver. Simply changing the

material in that layer may cause an escalated writing error rate, which affects the lifetime of recorded discs. Additionally, JVC use silver based reflective layer because most of the drives in the market is designed with silver reflective layer discs and the best compatibility between these are secured.

Our Archival Grade DVD-R employs a uniquely developed “special alloy” on the silver based reflective layer to maintain suitable reflectivity so that long-term storage capability can coexist.

Morphology change of reflective layer by heat test (250°C)



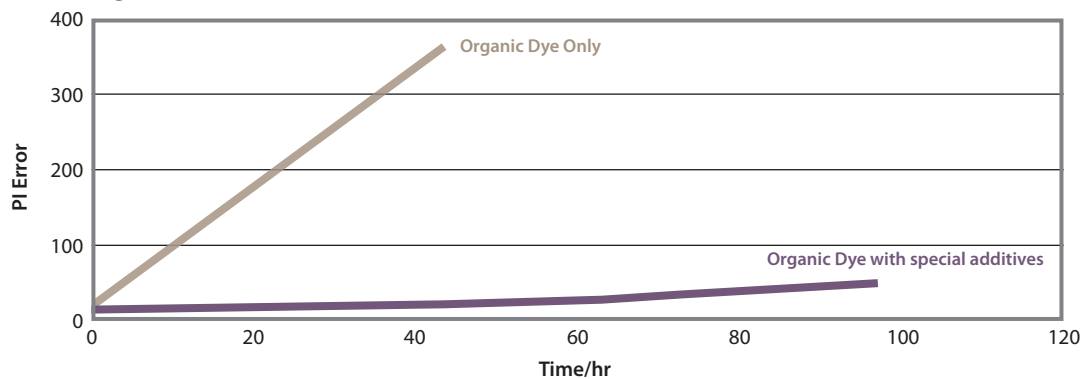
* Roughness of reflective layer

Uniquely designed organic dye

The design of the organic dye is also important for long-term archiving. Additives developed in-house are used for the organic dye for our archival grade DVD-R. This minimizes

decomposition of the organic dye by heat or light during long-term storage since the signal (data) cannot be read back if the dye is decomposed.

Light-Resistance Test

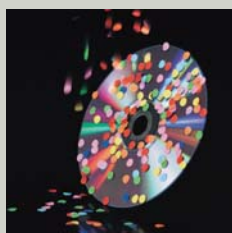


JVC Hard Coat Technology provides extra protection

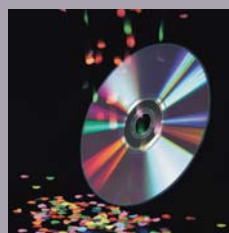
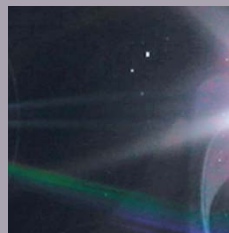
A special coating on the recording surface creates a hard coating and protects your

important data from scratches, fingerprint, and dust.

Our Standard Surface



Hard Coat Surface



- 200 times more scratch resistant

- 7 times more finger print resistant

- 1000 times more dust free

Stability and Consistency in Each Production Lot

Made only in Japan

Fully automated production lines



"Archival Grade DVD-R" is manufactured by exclusive production lines in Japan. Quality control is set at the highest level and inspection frequency is approximately 10 times greater compared to standard products. This allows the minimum fluctuation of the products needed to meet strict storage requirements.



Furthermore, stress/acceleration tests are carried out to each lot to ensure the durability and reliability is high enough for "Archival Grade".



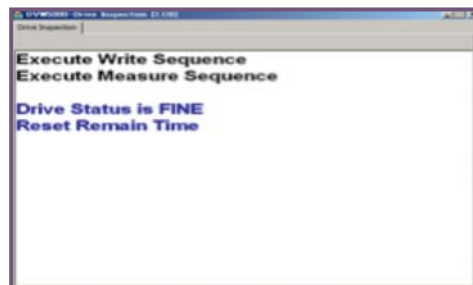
Acceleration test to each lot

Archival Drive

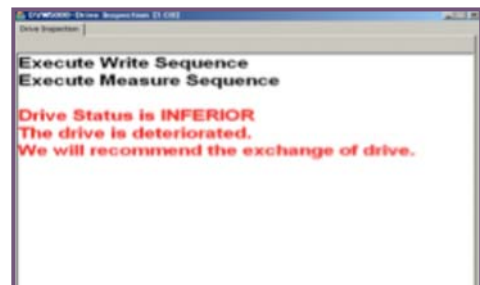
The low occurrence of initial error rate is a key component in achieving long term archiving. All error rates are decided by the quality of the drives and media used. For this reason, we developed archival grade drives that have specialized firmware used to optimize JVC archival grade media. This combination ensures the best recording quality and extends your disc migration period. Our uniquely developed self-diagnosis software verifies proper drive operation and manages results to the required levels. This

process and self-diagnosis consistently provides the best -recording outcome. An LED light turns on automatically and this designates that a recalibration test is needed. The recalibration test is done every 200 hours. Once the recalibration test is completed the LED light turns off and the count resets to zero, assuming the result meets the preset JVC quality level. If degradations are found, the LED light stays on and further action is required.

Display showing positive result



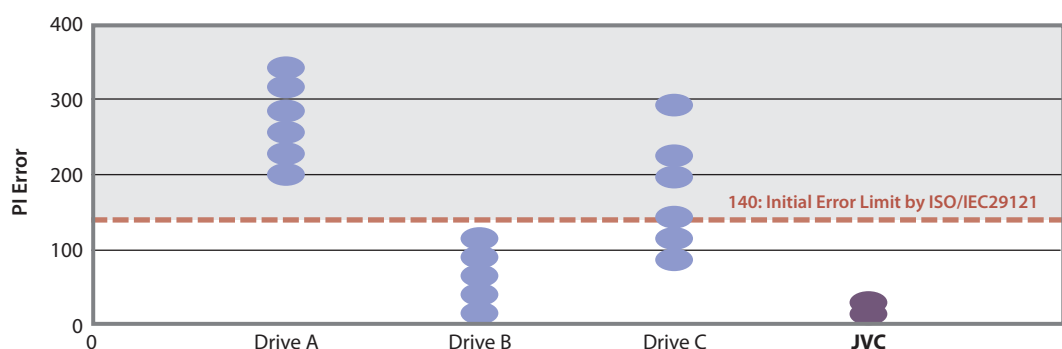
Display showing failure alert



Characteristic comparison –Combinations of drives and DVD-Rs

Below is a test result from different drives and JVC Archival Grade DVD-R. The graph explains

how important the combination of drive and media is to achieve the lowest error rate.



- Internal serial, internal parallel and external USB are supported.
- Self-diagnosis function works on Windows, XP, VISTA, Windows7.

Error Checker

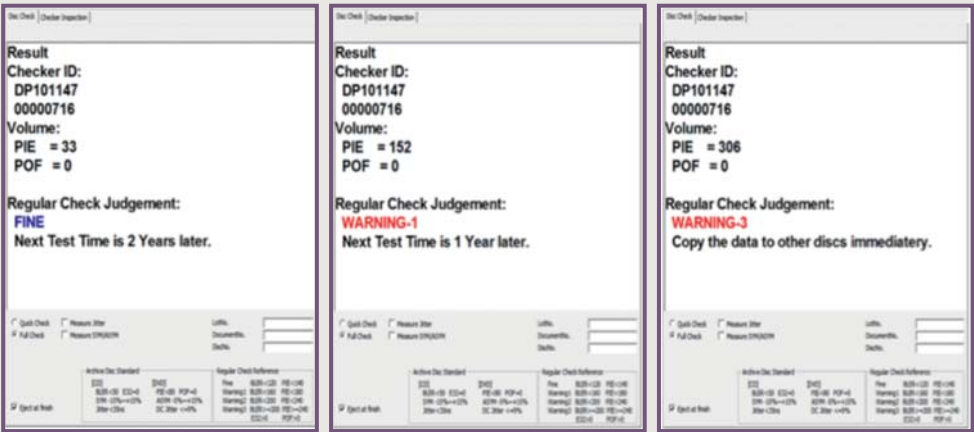
Industry standards strongly recommend the checking of disc quality before archiving data on optical discs or during long term storage. **ISO/IEC29121** defines the initial occurrence error rate and the rate during the storage for safe data retention. JVC's Error Checker was specially developed for the archiving industry with the primary objective to provide safe data retention on optical discs. It is an easy operation. After inserting a disc and pressing a button, discs are automatically tested and the result and warning level is

shown. The results can be downloaded to CSV file for analysis and review. This exclusive error checking technology was developed by JVC using its expertise and extensive experience as the market leader in disc manufacturing. JVC has employed all of its knowledge and engineering into this product. The Error Checker also has a self-diagnosis function to ensure the best possible condition of the unit on a consistent basis to achieve accurate test results.

Result display

As shown below, error rate, warning level and the required time interval for the next test will be displayed on the screen for a full understanding of the disc conditions. The displayed indexes comply with **ISO/IEC29121**. These indexes define how to achieve the safest archiving on optical discs through the management of error rates. **ISO/IEC29121** sets as 'initial error rate at <140' and 'archiving error rate (during storage) at <200'.

There are some other values explaining the condition of the discs such as jitter and deviation. The error rate (PIE and POF) represent these rates. (Error rate is escalated when one or more of these values are at an unsatisfactory level.) The management of error rates enables users to accurately understand the data condition.



- Self-diagnosis function works on Windows, XP, VISTA, Windows7.

CSV file output

The results can be downloaded to CSV file for management and analysis of the disc. The main display items are result, type of disc,

label, MID, testing date, warning level and the time interval before next test.

Specification



Internal Drive



External Drive



Error Checker

Archival Drive		
Disc Speed	DVD+R	16X (CAV)
	DVD+R DL	8X (ZONE CLV)
	DVD-R	16X (CAV)
	DVD-R DL	8X (ZONE CLV)
	DVD+RW	8X (ZONE CLV)
	DVD-RW	6X (CLV)
	DVD-RAM	N/A
	CD-R	40X (CAV)
	CD-RW	N/A
Reading Speed	DVD-ROM	16X (CAV) Single Layer
	DVD-R	16X (CAV)
	DVD+R DL	12X (CAV)
	DVD-R	16X (CAV)
	DVD-R DL	12X (CAV)
	CD-ROM	40X (CAV)
	CD-R	40X (CAV)
	CD-RW	32X (CAV)
Interface	USB 2.0	
Data Buffer	2 MB	
Loading Mechanism	Disc Tray	
Loading Lifetime	More than 10,000 times (in clean environment)	
Environmental Conditions	Operating: 5-35 °C	
	Not operating: -10-55 °C	
	Transportation: -20-55 °C	
Power	100-240 V AC 50-60 Hz	
Size	172 W x 64 H x 242 D (mm)	
Weight	1,350 g	

Manufactured by TEAC

Error Checker		
Applicable Discs	DVD	DVD-ROM, DVD-R, DVD-R DL
		DVD-RW, DVD+R, DVD+R DL
		DVD+RW
	CD	CD-DA, CD-ROM, CD-R, CD-R
Disc Dimension	12 cm, 8 cm	
Measurement	DVD	PI Error Rate
	CD	Block Error Rate
Measurement time	DVD	Standard Mode: 10 min. 30 sec
		Quick Mode: 2 min. 30 sec
	CD	Standard Mode: 6 min
		Quick Mode: 1 min. 30 sec
Interface	USB 2.0	
Loading Mechanism	Disc Tray	
Loading Lifetime	More than 40,000 times (in clean environment)	
Environmental Conditions	Temp.	Operating: 5-35 °C
		Not operating: -10-50 °C
		Transportation: -20-55 °C
	Humidity	15-85 °C (without condensation)
Power	100-240 V AC 50-60 Hz	
Size	172 W x 64 H x 242 D (mm)	
Weight	1,350 g	

Manufactured by TEAC

SAFE and LONG term Archiving

JVC's Solution Complies to:

ISO/IEC10995

International standard defining the test method
to estimate DVD-R longevity.

&

ISO/IEC29121

International standard defining a safe level of error rate
at the time of writing and during storage





Recording media for professional use

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