OSS - 2005
In Search of the Long-Life Disc

National Institute of Standards and Technology
(NIST)
Information Technology Laboratory
Information Access Division

Fred Byers
E-mail: byers@nist.gov
NIST Measurements and Standards Laboratories

- Strengthen the U.S. economy and improve the quality of life by working with industry to develop and apply technology, measurements, and standards

- Enhance US industrial competitiveness and economic growth through critically needed standards, measurements, and data

OSS - 9/28/05 - NIST - Fred Byers
Perspective on Optical Disc Longevity

- Disc longevity
  - Varies across the industry
  - Changes across the industry
  - Commoditization: competition based primarily on price reduces incentive for the production of higher-cost, higher-quality discs

- Consumers are often uncertain or incorrect about disc longevity
- Consumers are uncertain about which discs to buy for long-term expectations
Needed

Value-added disc differentiation for higher quality discs

Common differentiation labeling based on a common evaluation method – across the industry
Longevity-Specific Test Method

Test for a targeted time requirement, not for full Life-Expectancy

• A test method to align a test measurement with consumer longevity requirements
• A test that can be preformed in a reasonable time as required by the industry*

* A targeted-time test makes possible the development of a shorter time-to-implement test than the existing life expectancy standard (ISO 18927) requires.
Longevity Specific or “Archival” Test

Goals:

1. Industry Standard Test Method
   - A consistent, across-industry test for discs intended to be used for long-term storage

2. A test that industry accepts
   - Industry supports its development and will use it

3. Labeling for consumers
   - Statement or logo
   - A metric to use (e.g. 30 years, 50 years, 75 years)

4. Certification
   - Shows disc was tested in an accredited laboratory
   - Shows disc passed specific criteria
Laboratory Accreditation

For testing consistency and conformity across different testing laboratories:

• Laboratory Accreditation Requirements
  - defines what must be met for a testing laboratory to achieve accreditation

• Laboratory Accreditation Process
  - evaluation of a testing laboratory for satisfying accreditation requirements to achieve accreditation
Disc Validation and Certification

• Validation is the end result of the successful passing, by a set of discs in an accredited laboratory, of the test requirements for a given grade certification (e.g. 30, 50, 75, 100 years.

• Certification is the acknowledgment that validation has been successful for a disc type and that any other criteria, established by a certifying organization for issuing certification, has been met.
Paths to Consumer

Path 1: Self testing and performance declaration
Path 2: Performance demonstrated by testing in accredited laboratory and/or by accredited test
Path 3: Performance demonstrated by testing and product certification
Specifications for:
raw materials,
process, packaging,
etc.

Manufacturer Testing?

Manufacturing for vendor

Vendor

Third party testing or vendor self-testing

Packaged w/vendor’s name

Vendor manufacturing

Ship to stores or warehouse

Ship to stores or warehouse
**- Alternative -**

**Vendor Implementation**

Specifications for: raw materials, process, packaging, etc.

Manufacturer Testing?

Manufacturing for vendor

Vendor

Packaged w/vendor’s name

Vendor manufacturing

Ship to stores or warehouse

Ship to stores or warehouse

Industry-standard test for determining discs that are “archival” quality

Third party testing or vendor self-testing
- Alternative -
Laboratory Accreditation

Specifications for:
raw materials, process, packaging, etc.

Accreditation Authority (OSTA?)

Requirements for recognition as an accredited laboratory to apply the industry-standard test

Manufacturer Testing?

Manufacturing for vendor

Vendor

Third party testing or vendor self-testing

Packaged w/vendor’s name

Vendor manufacturing

Ship to stores or warehouse

Ship to stores or warehouse

Requirements for recognition as an accredited laboratory to apply the industry-standard test
- Alternative -
Disc Certification

Specifications for:
raw materials, process, packaging, etc.

Certification Authority (OSTA?)

Specifications for:
Test and accreditation, Use of mark, fees, Standards requirements

Third party testing or vendor self-testing

Manufacturer Testing?

Manufacturing for vendor

Vendor

Packaged w/vendor’s name

Vendor manufacturing

Ship to stores or warehouse

Off-the-shelf sampling by Certification Authority or third party

Ship to stores or warehouse
Validation and Certification Process Interaction

-certification Authority
Control board

Accreditation → Advisory/Disputes ←

Testing Laboratory

Seller (Provides certified product)

Validation for Disc Certification

Buyer (Desires product certification)
Logistics for applying a certification mark

1. **Materials**
2. **Sample Disc Construction**
3. **Vendor labeling**
4. **Validation testing for certification**

**Certifiable after successful validation from testing**
(Approximately 13-14 weeks testing in accredited laboratory)

5. **Same Materials as above**
6. **Same Disc Construction Process**
7. **Vendor labeling + Certification mark**
8. **Ship**
Differentiated Discs

Possible labels for differentiation:

“Archival Grade”  “Standard-Tested”
“Lifetime-Grade”  “Benchmark-Tested”
“Storage Grade”  “Storage Quality”
other?

- Differentiation by quality, not price
- Performance value versus commodity
Possible Disclaimer/ Limitation

The result of passing the test and displaying the certification mark only indicates that the disc will minimally last with \textit{relatively high probability} for the number of years as stated by the certification mark, under usage/storage conditions specified by seller, and based on the accuracy and limitations generally accepted by the scientific community for accelerated aging testing in general.
Thank you!

Fred Byers
NIST
byers@nist.gov
301-975-2909