

Illustrating The Standards

Due to the interlinking of Standards between The National Fire Protection Association (NFPA), Underwriters Laboratories (UL) and the Uniform Building Code (UBC) the “Owner of the Records” or “The Responsible Party” never fully understand the effects codes have on them when called into a court room to defend their business practice or operating procedures in protecting business records. It is only at this critical moment where the attorney for the plaintiff defines “Good Business Practice” in comparison to negligent behavior in following the applicable code, that the defendant truly understands the burden of compliance.

To clarify text taken as direct quotations, I utilize italic as well as quotation marks. Where the text is from the Appendix, which is included in each Standard as explanatory material for enhanced understanding of the document, I use the “A” designation for Appendix. This material is often used in “Prudent Man” explanations to simply the intent of code language.

National Fire Protection Association Standards are utilized by building code officials as well as the “Owner of the Records” to provide industry accepted practice and “Prudent Man” procedures for insuring the survival of the vital records and media. These records are defined as being either *“irreplaceable or that contain information for which temporary unavailability could constitute a serious legal or business impairment.”* (NFPA 232-1.6.15.9)

The relevant Standards are **NFPA 232** *Protection of Records* and **NFPA 75** *Standard for the Protection of Electronic Computer Systems* and reference to:

- UL 72, *Standard for the Protection of Records Protection Equipment*, and;
- UL 155, *Tests for Fire Resistance of Vault and File Room Door*.

Seldom do corporations or organizations employ consultants to understand the language of mandatory Standards prior to a litigious event. At the moment of crisis they seek to clarify whether or not their standard operating procedures will be viewed as responsible and well-advised. Unfortunately, the complexity of the various codes often leave corporations exposed because what they have done as business practice for many years is now viewed as negligence because of their failure to follow the Standards and guidelines for protecting their vital business records and information assets stored in the form of digital media.

The rapid transformation, from paper based vital records to digital media as the vital information assets of the corporation, that has occurred in the last few years has changed the entire business model for business continuity. But less than 10% of organization have migrated their vital records policy through all of the records types that they now rely on for disaster recovery. In short, they no longer understand what is necessary to protect all of their information assets. This document is intended to help illustrate what is considered the current state of the industry and its regulations.

Standard Records Vault (NFPA 232-5)

“The walls of the building shall not be used as walls of the vault, because collapse of the building can cause damage to the vault and its contents.” (NFPA 232- 5.2.2)

“Door openings shall be protected with an approved vault door.” (NFPA 232- 5.7.5.2)

In the storage of paper documents a Class 350 Vault Door is required.

In the storage of microfilm or some media a Class 150 Listing is required.

In the storage of computer media a Class 125 Listing is required.

Vault Door (NFPA 232 – 5.10)

“The vault door shall be listed or labeled in accordance with ANSI/UL155, ‘Tests for Fire Resistance of Vault and File Room Doors’. The vault door shall have a rating in hours of fire resistance, equivalent to the rating of the walls of the vault, as follows:

4-hour vault ---4 hour door” (NFPA 232 – 5.10.1)

The ratings of the vault door and the vault chamber shall be equivalent to the type of media or record type being provided protection. Media Vault shall provide a media rating.

Protection of Records (NFPA 75 –7)

“Vital records or important records that have not been duplicated shall be stored in listed records protection equipment with a Class 150 one-hour or better fire resistance rating as outlined in UL 72, Standard for the Protection of Records Protection Equipment.” (NFPA 75 –7.1.2)

Listed(NFPA 75 Definitions 1-4)*

“Equipment or materials included in a list published by an organization acceptable to the authority having jurisdiction and concerned with product evaluation that maintains periodic inspection of production of listed equipment and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specific manner.”

Testing done under UL 72 or UL 155 and for which a Listing occurs or a label is provided shall be considered as meeting the requirements.

Underwriters Laboratories, UL 72 Test for the Fire Resistance of Record Protection Equipment – Classifications and Ratings

“Records protection equipment is classified in terms of an interior temperature limit and a time in hours. Three temperature limits are employed: 350° F., 150° F., or 125°F. The time limits are 4,3,2,1, or 1/2 hour. The complete rating indicates that the specific interior temperature limit is not exceeded when the device is exposed to the standard fire test as described in these requirements for the length of time specified including the cool down period following the standard fire exposure.” (UL 72 – 3.1)

Vault doors rated for Class 350 (Paper Document Rating) are not sufficient for media as they allow the temperature to rise to 350° F. are unacceptable for a media destroyed at

125° F. and which cannot withstand elevated relative humidity above 80% during the fire exposure.

“Doors shall be equipped with an automatic closing device operated by a heat-actuated or smoke-actuated release for doors that are held in the open position.”
(NFPA 232 – 5.10.4)

“Temperature classifications of 150° F. and 125° F. further indicate that the interior relative humidities of 85 and 80 percent, respectively, are not exceeded when the device is exposed to the standard fire test and the cooling down period following the test.” (UL 72 – 3.3)

Concrete has been used for decades for construction of vaults to protect paper but concrete vaults have not been listed for media due to the chemical release of steam into the vault chamber which rapidly elevates the temperature to 212° F. and the relative humidity to 100% (RH). Per the requirements of the UL 72 test procedure these vault chambers fail the media rating.

Records Stored Outside the Computer Room (NFPA 75 – 7.2)

“Records not protected by an extinguishing system shall be stored in fire-resistive rooms in accordance with NFPA 232, Standard for the Protection of Records.”
(NFPA 75 - 7.2.1)

NFPA 232 – 2000 Protection of Records – A Standard Evolving

Vaults storing media can be environmentally controlled to preserve the integrity of the magnetic media. This new provision was added to prevent the rapid deterioration of magnetic media that occurs when media is exposed to cycling temperature and humidity as would occur in a non-conditioned vault chamber. (5.7.5.5, 7.7.3.3, A7.7.3.1)

The Standard also maintained the requirement of minimizing the risk exposure of any storage environment by providing the 5,000 Cu. Ft. of volume for a vault not providing fire suppression equipment, and 25,000 Cu. Ft. of volume for a vault providing internal fire suppression.

The Standard also states that records defined as a higher value than “Useful Records” such as Important, Long Term, Permanent be stored in compartmentalized warehouses wherein the volume of the compartment storing the above described records shall not exceed 250,000 cubic feet of records storage volume in a single compartment.

This introduced the element of Risk Tolerance which place the responsibility for defining the type of storage on the “Responsible Party.” The Responsible Party shall define the level of protection required for each classification of record.

“Responsible Party. An organization, office, or individual charged with the

classification, retention scheduling, and disposition of records.” (1.6.17)

NFPA 75 Appendix A

Temperature Considerations:

(b) “Damage to magnetic tapes, flexible disks and similar media may begin at sustained ambient temperatures above 100° F. (37.8° C.) However, damage occurring between 100° F. and 120° f. can generally be reconditioned successfully, whereas the chance of successful reconditioning lessens rapidly with elevations of sustained ambient temperatures above 120° F.”

Concrete and filled brick or block vaults deliver steam into the vault chamber in as little as 27 minutes of test procedures. This steam is 212° F. (100° C.) and 100% Relative Humidity.

NFPA 232 Appendix A

*“Vaults require unusually good design and construction to ensure that the structure satisfactorily withstands all of the conditions that could be imposed on it by fire.
“(A.5.2.3)*

“Traditionally recognized construction, (if not a listed or labeled product) that meets these requirements is as follows.

Fire resistance is determined by wall thickness as follows:

(1) The minimum thickness of a 4-hour vault wall is 12 in. for brick and 8” for reinforced concrete. (A.5.7.4)”

Concrete shall be reinforced with steel rods of 1/2” diameter running in cross-hatch manner. Any brick protection is to be filled solidly with concrete

*“Ordinary fire doors such as hollow metal, tinclad, sheet metal, or metal-clad types; steel-plate types; and file room doors cannot be permitted to be used as vault doors.”
(A.5.10.1)*

Labeled fire doors are not the same protection as labeled vault doors. The test procedures for a typical building fire-door test only for a burn-through of the door itself. The door can be red-hot on the interior of an office-type fire door and be radiating heat of over a 1000° F. This rapid rise in temperature may lead to the destruction of any material stored on the inside of this door. A vault door, on the other hand, requires that heat migration through the door be limited to a rate of rise not to exceed 350° F during the duration of the test. A data safe door assembly would be required to maintain the temperature below 125° F for the duration of the test procedure.

Case History: *“Satisfactory performance of a labeled vault door saved records in the upper story of a two-story vault. A labeled fire door (not a vault door) on the first story was damaged, and the records in the first story were destroyed.”* (A.5.10.1(b))

Classification of Devices (A.8.2)

“Devices can be classified as follows:

(a) Records protection equipment is classified in terms of an interior temperature limit and a time in hours. The following three temperature and humidity limits are employed:

- (1) 125° F. with 80% relative humidity (RH), which is regarded as limited conditions for floppy disks.*
- (2) 150° F. with 85% relative humidity (RH), which is regarded as limited conditions for photographic, magnetic, or similar non-paper records.*
- (3) 350° F. with 100% relative humidity (RH), which is regarded as limited conditions for paper records.”*

Classification Environmental Control – Media Storage

Storage facility must meet all requirements of ANSI/PIMA IT9.23 "Imaging Materials -Polyester Base Magnetic Tape - Storage Practices" and all requirements of NFPA 232-2000 "Standard for Protection of Records."

If microfilm is the controlling media, then ANSI IT9.11 must be adhered to for the storage conditions. Storage must be in a minimum 2 hour rated - Class 150 storage device (including standards records vault) tested in accordance with UL72 - "Standard for Tests for Fire Resistance of Record Protection Equipment" as required by NFPA 232-2000.