

FM Global Property Loss Prevention FAQ

What is FM Global Property Loss Prevention Data Sheet 5-32 for Data Centers?

The Property Loss Prevention Data Sheet 5-32ⁱ provides FM Global's best advice for loss prevention in data centers in the areas of property protection and business continuity.ⁱⁱ These are not code requirements or strict prerequisites of having an FM Global insured facility. However, this guidance is based on the depth of FM Global's research and testing, historical loss data and best practices from the related industries of construction, building materials, fire protection and others. The Data Sheet 5-32 recommendations are applicable to the construction, use, protection, inspection and maintenance of data centers. This document is intended to summarize and clarify that portion of Data Sheet 5-32 on FM Global's recommendations related to fire protection systems for data processing equipment rooms and equipment.

What does this mean?

FM Global recognizes that different fire protection systems are needed depending on what is being protected with a distinction between protecting the room or the valuable equipment contained therein. Since water based systems typically use heat activation, a larger fire size and higher room temperature can occur prior to activation of the system. As a result, the data processing equipment can sustain heat, smoke and/or water damage, which may result in loss of the equipment and interruption in continuity of operations. On this basis, when the protection of the room, itself, is the primary goal, water sprinklers and water mist systems are appropriate.

When there is a need to protect the valuable equipment in the room or to preserve continuity of operation, a clean agent system is recommended to augment the water based structural protection. This two-system staged design utilizes the clean agent to extinguish the fire in its incipient stage, prior to activation of the water based system, precluding water damage to the data processing equipment and preventing the fire from becoming large enough to damage equipment or threaten or continuity of operations.

FM Global Property Loss Prevention FAQ

Summary of 5-32 Data Sheet Recommendations

The FM Global recommendations are based on the following fundamental principles: limiting the fuel loading, eliminating the ignition sources, and providing appropriate FM Approved fire protection systems.

1. **Limit fuel loading.** Construct data centers of noncombustible materials. Use non-propagating cables and limit combustible (paper and other) material in the room.
2. **Eliminate ignition source.** Automatically power down the data processing equipment upon detection or activation of any fire extinguishing system.ⁱⁱⁱ
3. **Provide a fire protection system.**
 - a. **Data Processing Equipment Room Protection.** Provide FM Approved automatic sprinkler or automatic water mist system protection listed for data hall applications. An FM Approved clean agent system that employs automatic power isolation of equipment upon smoke detection may be used for protection if the construction is noncombustible and does not contain additional combustibles.^{iv}
 - b. **Data Equipment Protection.** “When it is essential to reduce equipment damage from an incipient fire to minimum possible levels, or to facilitate the return to service, provide an FM Approved clean agent fire extinguishing system with detection to protect the data equipment within the data processing equipment room. This is to supplement the automatic sprinkler or water mist system protecting the facility or raised floor.”^v

Automatic Power Down Recommendations

All fire protection systems have the same recommendations for automatic power down. This recommendation is in place for water-based protection to eliminate the potential electrical hazard when water is present. For clean agents, this recommendation addresses the possibility of re-ignition after the hold time of the clean agent expires, typically 10 minutes.

An alternative to the recommendation for automatic power down with a clean agent discharge may be granted if the protection scheme can adequately mitigate the risk of re-ignition. One possible alternative is increasing the clean agent hold time to allow emergency response personnel time to isolate the source of the fire for re-ignition.

While it is recommended that both water-based and clean agent fire protection systems initiate a power down of data processing equipment, the return to service time can be much shorter for clean extinguishing agent (CEA) systems. CEAs do not require extensive clean up or drying of data processing equipment after release as they are electrically non-conductive gases that do not leave residue on the equipment or interfere with normal electrical operation.

FM Global Property Loss Prevention FAQ

Conclusion

The FM Global Property Loss Prevention Data Sheets recognize the key differences between sprinklers, water mist, and clean agent fire protection systems and it makes recommendations on their appropriate application. It also makes clear that no one system is capable of protecting both a data processing equipment room and equipment without risk of water, heat or smoke damage. Water-based systems protect the building but will cause collateral damage to equipment. Clean agents protect data processing equipment and contents, however they are not designed to protect combustible construction. It is recommended that consideration be given to employing a clean agent and a water-based system together to achieve full protection without compromise.

- i "FM Global Property Loss Prevention Data Sheet 5-32 for Data Centers and Related Facilities" available at www.fmglobalsheets.com
- ii "Data Sheet 5-32", Section 1.0 – Scope, Section 2.1 – Introduction
- iii "Data Sheet 5-32", Section 2.8.4.1.1
- iv "Data Sheet 5-32", Section 2.4.3.3
- v "Data Sheet 5-32", Section 2.5.1.2.1

The 3M™ Novec™ Brand Family

The Novec brand is the hallmark for a variety of proprietary 3M products. Although each has its own unique formula and performance properties, all Novec products are designed in common to address the need for safe, effective, sustainable solutions in industry-specific applications. These include precision and electronics cleaning, heat transfer, fire protection, protective coatings, immersion cooling, advanced insulation media replacement solutions and several specialty chemical applications.

.3M™ Novec™ Engineered Fluids • 3M™ Novec™ Aerosol Cleaners • 3M™ Novec™ 1230 Fire Protection Fluid • 3M™ Novec™ Electronic Grade Coatings • 3M™ Novec™ Electronic Surfactants • 3M™ Novec™ Dielectric Fluids

United States	China	Europe	Japan	Korea	Singapore	Taiwan
3M Electronics Materials Solutions Division 800 810 8513	3M China Ltd. 86 21 6275 3535	3M Belgium N.V. 32 3 250 7521	3M Japan Limited 81 3 6409 3800	3M Korea Limited 82 2 3771 4114	3M Singapore Pte. Ltd. 65 64508888	3M Taiwan Limited 866 2 1901 9011

Regulatory: For regulatory information about this product, contact your 3M representative.

Technical Information: The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use: Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

Warranty, Limited Remedy, and Disclaimer: Unless an additional warranty is specifically stated on the applicable 3M product packaging or product literature, 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. If the 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability: Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.



Electronics Materials Solutions Division
3M Center, Building 224-3N-11 St. Paul, MN
55144-1000
1-800-810-8513
www.3M.com/novec

3M and Novec are trademarks of 3M Company.
Used under license by 3M subsidiaries and affiliates.
Please recycle.
© 3M 2016. All rights reserved.
60-5002-0892-5