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Understanding Your Sprinkler Test Results

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Submitting sprinklers for periodic field service testing is not only important for fire safety code compliance, but also is the responsibility of fire protection professionals to maintain the well-being of our communities and environment. Since sprinkler performance can change over time in ways that are not always visible, once the floor level inspection has been completed, sprinklers should be sampled and sent for testing if required by NFPA 25 2026 Ed. Section 5.3.1.1.

NFPA 25 2026 Ed. Section 5.3.1.1 states that samples shall be sent to an “approved testing laboratory” for field service testing. But what qualifies an approved testing laboratory? It’s important to choose a lab that has demonstrated their competence and ability to generate valid results, and according to Annex A of NFPA 25, ISO/IEC 17025 is an example of a standard that provides the applicable requirements. Dyne Fire Protection Labs is ISO/IEC 17025 accredited for the mechanical testing of automatic field sprinklers and has an ISO 9001 certified quality management system.

With more than 25 years of testing experience, Dyne understands the challenges associated with maintaining fire sprinkler systems throughout their service life. With a 5-business day turnaround, free sample kits, free shipping within the contiguous United States, and immediate communication with our customer service and quality staff, our goal is to provide objective periodic sprinkler testing that is fast, accessible, and reliable.

Once the floor level inspection and performance testing are complete, the next step is to understand the test results so any fire safety risks can be addressed accordingly.

Reports

Every sprinkler tested by Dyne Fire Protection Labs comes with a detailed laboratory test report, which provides critical information about each sample’s performance and specifications. The report includes:

- Job information
- Year marking
- Manufacturer
- Series/Model/SIN
- Temperature rating
- Response type
- Releasing mechanism
- Water seal configuration
- Measured response time
- Response Time Index (RTI)
- Water seal release results
- Before and after testing photos are also available through a separate link

Note: These reports are available for viewing through the Dyne Fire Protection Labs portal on the NFPA Global Solutions website at kits.nfpaglobal.com, offering full transparency into your test results, and helping you make informed decisions for system maintenance and compliance.

Appearance

NFPA 25 2026 Ed. Section 5.2.1.1 states that “sprinklers shall be inspected from the floor level annually” and sprinklers showing signs of leakage, detrimental corrosion, damage, loss of fluid, detrimental loading, or paint detrimental to performance shall be replaced. Since this assessment takes place during the floor level inspection, Dyne does not offer additional appearance evaluation. However, pictures of each sprinkler sample are taken and provided in addition to their response time results. Any sprinkler with damage that renders the sample untestable will be brought to the attention of the customer.

Sensitivity and Functionality

Dyne tests the response time of the sprinklers to confirm the sprinklers will activate and release in a specified amount of time when exposed to a defined temperature and air flow. Each sprinkler is plunged into an oven at the appropriate temperature and air flow rate to measure their response time and waterway clearance at 7 psi. The acceptable response time is based on a response time index (RTI). The RTI requirements are listed below. Note that a sprinkler coated with a material for corrosion resistance (wax for example) is allowed extra time as defined in UL 199. The response time of coated standard response sprinklers is 180 seconds or the maximum response time (whichever is greater).

Sprinkler	Definition
ESFR	RTI value should not exceed 50 (meters-seconds) ^{1/2}
Fast Response	RTI value should not exceed 65 (meters-seconds) ^{1/2}
Standard Response	RTI value should not exceed 350 (meters-seconds) ^{1/2}

Failures

If the response time does not meet the RTI requirement, the sprinkler response time will be marked as “FAIL”. Additionally, sprinklers that failed to release due to the release mechanism not activating, the water seal not releasing, or pressure loss not being detected due to a blocked waterway will be marked as “FAIL” on the report. If a sprinkler fails to meet the response requirements as defined above, all sprinklers within the area represented by the failure shall be replaced per NFPA 25 2026 Ed. Section 5.3.1.3.

Failures where sprinklers do not activate commonly occur due to age-related loss of fluid, loading, or corrosion of the release mechanism. Failure to activate is the most critical failure since no water will be dispersed. A sprinkler that activates too late will still deliver water, but not as designed. The slower response time may not be sufficient for effective suppression.

The most common type of failure seen at Dyne is where the sprinkler activates but the water seal fails to properly release. A corroded or stuck water seal will prevent water flow. Some corroded water seals partially release and remain attached to the sprinkler head after testing, which may still deliver water, but at an inadequate rate or spray pattern.

Many sprinklers that fail due to the water seal not releasing contain an O-ring water seal. This outdated design was first recalled in 2001 due to its high risk of failure, but Dyne regularly receives sprinklers submitted for testing that feature an O-ring water seal. The U.S. Consumer Product Safety Commission (CPSC) released an updated reminder on September 24, 2026, urging the immediate

replacement of recalled heads and a review of historical maintenance records to confirm previously identified recalled heads were properly replaced.

Ultimately, knowledge and understanding are the root of all fire safety prevention measures. Understanding how and why sprinklers fail, adhering to NFPA 25 standards, and making informed decisions about your testing strategy could be the difference between mitigating a disaster or facing serious consequences. Should you ever have questions about sprinkler testing or reports, Dyne's customer service team and quality technicians are here to help at 800-632-2304 or dyne.lab@nfpaglobal.com.

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