



Spring Has Finally Sprung

Hopefully spring is finally here after the hardest winter I remember in Buffalo (and maybe where you are also). It's nice to see that baseballs are flying through the air instead of snowflakes, and flowers are growing once again instead of snow mounds and record cold days.

Here at NGC Testing Services, we are always striving to grow and improve and find new ways to serve you better. As we march toward our 50th anniversary later this year, we will share more about new tests we will offer.

In this issue, our new "Tech Talk" column outlines pass/fail criteria for ASTM E 119 tests. We also focus on important specialty large-scale fire safety testing we perform, such as transit car fire testing, and a recently completed complicated test evaluating the fire safety of cable trays for nuclear power plants. As always, let us know if we can help, and enjoy the more temperate weather that comes with this season.

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TECHTALK

The pass/fail criteria for
 ASTM E 119 fire test...
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NGC Conducts Nuclear-
 Qualified Circuit Integrity
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Focus On: Transit Car Fire Testing: ASTM E 119



A subway car exiting out of a successful test.

NGC Testing Services is internationally known for its rail system fire test capabilities. We test most of the world's subway cars, from New York City to Switzerland to Japan. In addition to subway cars, we test major urban monorails, people movers, commuter light rails, locomotives and intercity rail passenger cars.

Our facility here includes large access doors and a 30-ton overhead crane for car delivery and handling, and the appropriate test furnace to accommodate this type of large-scale testing.

NFPA 130, Standard for Fixed Guideway Transit and Rail Systems, requires testing of floor and roof assemblies in accordance with test method ASTM E 119.

To complete the fire test criteria, the minimum fire exposure duration shall be the greater of the following:

- Twice the maximum expected time period under normal circumstances for a vehicle to stop completely and safely from its maximum operating speed, plus the time necessary to evacuate a full load of passengers from the vehicle under approved conditions.
- 15 minutes for Automated Guideway Transit (AGT) vehicles, and 30 minutes for all other passenger-carrying vehicles.

During the entire fire exposure, the following parameters shall apply:

- Transmission of heat through the assembly shall not be sufficient to raise the temperature on its unexposed surface more than 139°C (250°F) average and 181°C (325°F) single point.
- The assembly shall not permit the passage of flame or gases hot enough to ignite cotton waste on the unexposed surface of the assembly.
- The assembly shall support the representative loading.

For more information, please contact NGC Testing Services today.



NGC Testing Services Conducts Large-Scale, Complex Test Nuclear-Qualified Circuit Integrity Test

Some systems we test can help save lives inside of a facility as well as outside of it. The Type OFT system that DuraSystems has developed is such a system. This special fire-resistant cable tray system is designed to help safeguard multiple electrical circuits in commercial and industrial occupancies throughout the world. To test this system, DuraSystems Barriers Inc. of Vaughan, Ontario, contracted with NGC Testing Services. There is an extensive battery of rigorous acceptance criteria that this system must meet to satisfy the multi-faceted standards of the United States Nuclear Regulatory Commission, UL, and ASTM International — all at once. The most stringent requirements of all three test standards were employed to cover all three standards, including the use of upwards of 140 thermocouples, a 3-hour fire-endurance, and a 2-minute solid 2.1 bar (30 psi) hose stream test.

To prepare for testing, we have been working closely with DuraSystems for many months. This includes securing extensive instrumentation to prove out the performance of DuraSystems' design under strict requirements.

Some electrical circuits must be fireproofed ("operable while immersed in fire") to avert potentially huge disasters. For example, there must be safe shutdown wiring between control rooms and critical equipment, such as nuclear power generating station reactors or valves in petrochemical facilities. Failures in these operations

could have dire consequences to even those living and working in the surrounding areas. For this fireproofing to qualify itself, this test also includes an aspect that is not performed in normal fire-resistance testing: direct fire immersion of the sample. In contrast, when we test wall and floor samples, we subject them to the heat of a fire but not direct flame impingement.

As a result of successful testing with NGC Testing Services, DuraSystems Type OFT is now qualified for both re-enterable and field-installed systems. This covers both new construction, where wiring is placed inside of a pre-fireproofed tray with lids bolted shut to complete the rating after initial cabling or retrofits, and existing occupancies, where cladding is placed around the outside of previously installed cable trays.

Testing to three standards inside of one sample, such as this, requires great technical care and planning. NGC Testing Services has the facilities, furnaces and instrumentation capacity to carry out a large-scale intricate test of this type. Do you need help testing your highly classified product? Contact us today.



Eureka! How a winning sample looks after the 3-hour fire-endurance test.

TECHTALK What Is The Pass/Fail Criteria For The ASTM E 119 Fire Test?

How can we determine that a wall, partition, roof or floor that you manufacture will be safe when exposed to fire? We rely on the test method ASTM E 119. This comprehensive test allows us to evaluate the duration for which certain building elements can contain a fire, retain their structural integrity, or exhibit both properties during a predetermined test exposure. To conduct this test, we expose numerous building elements to uniform fire exposure and evaluate the period of resistance before the first critical point of behavior is observed.

The following critical timed events are recorded during the ASTM E 119 test. Pass/fail (endurance time of the assembly) is when the first of these events occurs:

- Temperature rise of 250 F above the ambient temperature on the average of all unexposed surface thermocouple locations.
- Temperature rise of 325 F above the ambient temperature on any single unexposed surface thermocouple location.
- For some assemblies, where structural steel members are utilized, a maximum temperature of 1,100 F on a structural steel member is exceeded.
- Any flaming observed on the unexposed surface of the test specimen.
- Smoke and/or gas emissions are hot enough to ignite cotton waste material applied on the specimen surface.
- Failure to sustain the applied load during exposure of load-bearing assemblies.

In many cases, the ASTM E 119 test requires an additional evaluation of the assembly where it is subjected to a hose stream test to establish a fire-resistance rating. For more details about this test (including information about what this test standard does not provide), please contact me. We're well equipped to help you run the ASTM E 119 test and will help you every step of the way.

Please stay in touch!

Send any e-mail changes or additions to info@ngctestingservices.com so you can continue to receive *NGC Testing Services Update*.

