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NGC TESTING SERVICES
ACOUSTICAL • FIRE • STRUCTURAL • ANALYTICAL℠

TESTING SERVICES UPDATE

MAY 2018

COME EXPLORE

Thank you clicking into our newsletter. We are always striving to serve you better and offer more testing capabilities here at NGC Testing Services. Be sure to check out our brochure or website links in this newsletter to see all we do.

As we approach the warm weather months and the height of the local tourist season here in the Buffalo area and Niagara region, we're reminded of the abundance of historic significance of the area, including La Salle, the explorer, and the Erie Canal. We draw on that in this issue, and we'll introduce you to some historic waterways you can explore during your visit to the lab. In later issues, we'll touch on the War of 1812 and many other interesting local historic facts.

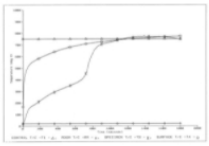
Also in this issue you'll find technical pieces on how ASTM E136 non-combustibility tests are conducted, including pass/fail requirements, and ASTM E1110 / E1111 acoustical testing determining Attenuation Class (AC) for ceiling systems. NGC Testing Services is unique in offering AC testing and CAC testing, along with several other hard-to-find tests for ceiling systems. Along with our full-scale fire testing and physical testing (air, wind, water, structural), we provide a one-stop shop for many of your testing needs.

Thank you for your business or your consideration to use NGC in the future. Have a great summer.

- Bob Menchetti

Director of Labratory Facilities & Testing Services

ASTM E136 - STANDARD TEST METHOD FOR BEHAVIOR OF MATERIALS IN A VERTICAL TUBE FURNACE AT 750° C



The International Building Code (IBC) and International Residential Code (IRC) prescribe ASTM E136 for materials that are required to be noncombustible. ASTM E136 uses a vertical tube furnace to expose building materials to a temperature of 750° C (1382° F). While actual building fire exposure conditions are not duplicated with this test method, it "will assist in indicating those materials which do not act to aid combustion or add appreciable heat to an ambient fire.",

Small test specimens (1.5″ by 1.5″ by 2.0″ ± 0.1″) are instrumented with two thermocouples: one placed on the specimen's outside surface and the other placed inside the center of the specimen. The instrumented specimen is placed into the vertical tube furnace set at 750° C.

A material is considered to pass (i.e., classified as noncombustible) if three of four test specimens meet the test method's requirements for weight loss (no more than 50%), temperature rise (no more than 30° C), and flaming (none after the first 30 seconds).

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HOW ARTICULATION CLASS RATINGS HELP OFFICES

Articulation Class (AC) is a single number rating system that places an objective number on the ability of acoustical materials to attenuate distracting noises that can occur in adjacent cubicles of an open office environment. It measures how effectively ceilings, walls and office furniture provide sound attenuation in this environment. This rating is especially important in areas like an open office layout where noise can distract workers and affect their productivity.

The AC of a material is measured per ASTM E1110/E1111 test procedures. A random sound field is introduced into one of a pair of simulated adjacent work cubicles in a special large test chamber in the laboratory which includes the acoustical material being tested, typically a ceiling panel system. These simulated cubicles are separated by a 5' high partial-height divider. A sound source is activated in one of the two cubicles. The attenuation between the source cubicle and the receiving cubicle is then measured at varying distances from the partial-height divider. Since the higher frequencies, i.e. > 1000 Hz, are the most distracting, the sound attenuations are weighted more heavily at the high frequencies. From these weighted attenuations, overall Articulation Class (AC) is calculated.

The better a material is at absorbing sound, the higher its articulation class. An AC below 150 is not considered effective in achieving acceptable privacy in an open office environment. Acoustical ceilings having a noise reduction coefficient of 0.55 will have an AC of approximately 150. A ceiling AC above 180 is recommended for adequate privacy in an open office.

NGC Testing Services is unique in that we have the laboratory facilities to offer AC

NGC Testing Services is unique in that we have the laboratory facilities to offer AC testing and CAC (Ceiling Attenuation Class) testing, along with several other hard-to-find tests for ceiling systems.

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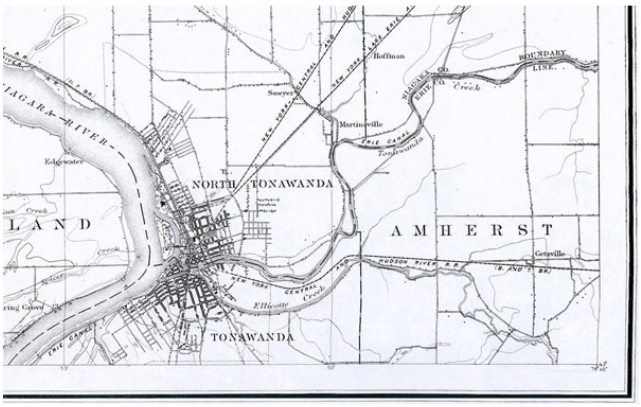
VISIT THE LAB, VISIT HISTORIC WATER ROUTES



Within 2 1/2 miles of our laboratory are two of the country's most historic and significant water routes.

In 1679, explorer **La Salle** sailed along the Niagara River shore, not far from our laboratory. The Buffalo/Niagara region was the most important venue in his epic journeys to find an interior water route from Quebec to the Mississippi Delta.

La Salle arrived from France with 30 men and enough materials, sails, anchors, and equipment to build two new sailing vessels. He sailed down the Saint Lawrence River, crossing Lake Ontario and into the wilderness of the lower Niagara River, and established a base at Lewiston, which was about as far as he could navigate up the Niagara without running into Niagara Falls and related rapids. From here, his journey needed to be completed by land. Out of necessity, materials including multiple heavy anchors and cannons were hand carried along an old Native American footpath in mid-winter. This entailed climbing a nearly 200'-high escarpment traveling 8 miles around the falls to a point on the Niagara, above and far enough from the Falls' influence, sheltered by Cayuga Island, to construct the first vessel.

There in the wilderness with the roar of the falls in the background, utilizing what they carried and the wood cut from local trees, La Salle's men set about to assemble the famous ship, Le Griffon. After about six months of construction, the ship had to be hastily launched and final construction completed on the water because they heard that the Native Americans were planning to burn the ship. They towed the Le Griffon by hand for several miles to clear the strong currents of the Niagara, reaching the calmer Lake Erie waters to begin its long voyage. The path of the Le Griffon went along the Niagara River shoreline about 2½ miles west of our laboratory facility.

This was the first of three trips La Salle took through our area. The Le Griffon was lost somewhere in the Great Lakes after he sent some of his men on a return voyage to Quebec. La Salle returned from the west to investigate the missing ship. The first 300 miles of his journey was on foot through snow and ice until he reached the western end of Lake Erie, where he built a canoe out of elm bark for the remainder of his journey, retracing his original route including along our nearby Niagara River.

The **Erie Canal** runs north and west of our laboratory. To the west, the canal ran along the Niagara River shore adjacent to a portion of La Salle's path; this section has been filled in, with only a slight hint of what once was. When self-propelled vessels became powerful enough to fight the strong currents of the Niagara, canal traffic was eventually rerouted into the river.

The canal merged with Tonawanda Creek north of our laboratory. This section is very much visible and in use from this point running east. Each year the cities of Tonawanda and North Tonawanda host the Canal Fest festival celebrating this section of the canal.

The Erie Canal's construction started in 1817 and was completed in 1825, resulting in a direct water transportation route from the East Coast to Buffalo and its docks on Lake Erie, connecting to all the Great Lakes and the west. Hand dug, it was 363 miles long, utilizing 83 locks to climb 682 feet from east to west, including climbing the same escarpment that formed Niagara Falls. The original canal was 40' feet and only 4' deep, although it was widened and deepened several times over its life span. Motive power was by horse or mule, walking along the adjacent shore (tow path) with a tow line connected to the vessel.

The canal terminated in Buffalo's Canal District, which was home to a mix of immigrants, canal boat operators and sailors of lake freighters (who did not like each other). The district was one of the world's most crime-infested areas (more about the Canal District in a future newsletter). During the 1825 opening ceremonies, water from Lake Erie and the Atlantic were exchanged by canal boat.A series of cannons signaled its opening from one end to the other. Stationed at regular intervals along the canal, about earshot apart, workers would hear the previous cannon shot, then fire their cannon. The cannons were fired from Buffalo to New York City and back again in two hours and 50 minutes. (The guys in our acoustical lab found this to be the most interesting fact and are debating the physics based on the speed of sound).

The Erie Canal was responsible for a new, less costly transport of goods and accommodated the great migration of people from east to west. Subsequently, it also directly resulted in the tremendous growth of Buffalo.

So when you are at NGC Testing Services completing your own exploration in

product testing and evaluating your engineering feats, you can visit these historic waterways. The sound of cannons may be replaced by white noise during acoustical tests and burning ships replaced by fire test furnaces, but the past is still nearby to explore..

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TAKE A CLOSER LOOK!

Check out our new **brochure** and watch our **video** for the latest updates about NGC Testing Services' capabilities. We're ready to put your products to the test, and this is a great way to see all that we can do for you. Take a look and give us a call â€" let us know how we can help.

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