NGC TESTING SERVICES
ACOUSTICAL • FIRE • STRUCTURAL • ANALYTICAL℠

TESTING SERVICES UPDATE

NOVEMBER 2018

IN PLAIN SIGHT

Thank you for reading our newsletter. Hopefully we are providing you some interesting articles, conveying what we do here and providing useful technical information about testing procedures and how results are calculated and evaluated.

NGC Testing Services' 53,000-square-foot testing facility is unique and impressive, featuring nine acoustical chambers built on springs; stacks of prebuilt assemblies; large overhead cranes; full-scale vertical, horizontal and two-story fire-test furnaces; and other large physical test equipment that simulates rain and wind. We are widely known throughout the industry for our testing capabilities. For this reason, we have clients worldwide, and many visit us to witness their tests. With visitors traveling long distances to our facility, many locals, even our closest neighbors, do not know who we are and what we do.

It is always interesting to see local residents' surprise reaction when they enter the facility and see its size and the large test apparatuses we have on site. When we bring in contractors who may work or live around the corner, but had no idea what we do here, several have said they pass our facility frequently over the years and never knew what we did. When we give tours to local organizations and colleges which expose this hidden gem we hear similar comments. So even though we have visitors from far and wide, our closest neighbors, in plain sight of us, do not know the world wide destination we are. Please keep us in mind for your testing needs and feel free to visit and see what many of our neighbors are missing.

In this issue, we have technical articles to discuss NFPA 285 pass/fail criteria and why overall acoustical ratings do not always tell the whole story about the acoustical performance of an assembly or material. Also included in this newsletter, we list a selection of items from countries outside the U.S. and Canada that we tested, which exemplifies the extent of our worldwide clientele.

Time is going fast - schools are in session and fall is upon us. We hope you had a great summer and will enjoy the autumn. Let us know if we can assist in your testing needs or if you have questions concerning the tests or technical information we included here.

Bob Menchetti
Director of Laboratory Facilities & Testing Services

WHAT ACOUSTIC SINGLE NUMBER RATINGS DO AND DON'T TELL YOU

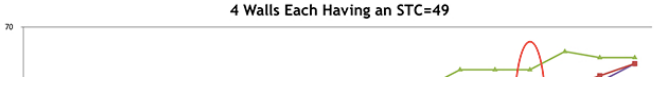
You know the acronyms, but do you know what they really say?

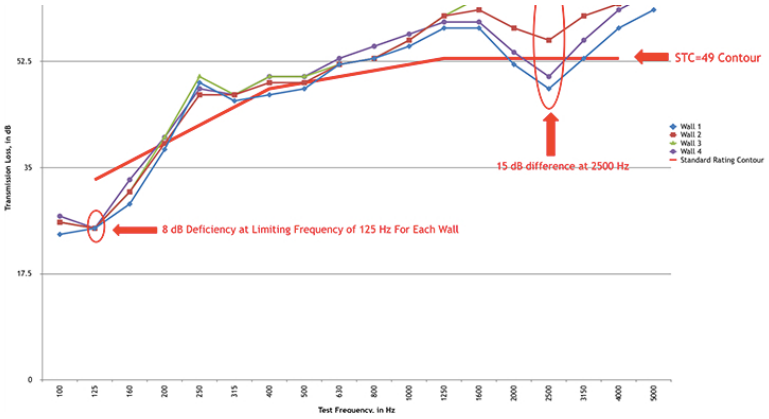
Sound Transmission Class (STC), Impact Insulation Class (IIC), Outdoor-Indoor Transmission Class (OITC), Noise Reduction Coefficient (NRC) and Ceiling Attenuation Class (CAC) are all measured very accurately in strict accordance with precise ASTM test standards. Each is a yardstick by which the acoustical performance of materials and systems are evaluated and compared to others. These ratings are used specify minimum values that are acceptable in the building industry. The single number rating is arrived at by fitting data that has been measured during the tests to that of standard rating contours. The contours of these standard curves are used to predict acceptability of transmitted sound to the response of human hearing.

Are the single number ratings in and of themselves adequate to predict how the material and system being installed will perform? Not always. To predict the performance that a material or system will acoustically provide requires not only the single number rating but also the performance of the material or system at each frequency measurement at which they are made during a test. That information is used to arrive at the single number rating by fitting the measured data to and shifting the standard rating contour. Acoustical tests measure in the frequency range from 80 Hertz to 5000 Hertz, which is the primary frequency range of human hearing. An acoustical consultant will analyze the attenuation, insulation or absorption of a material or system at each frequency to accurately predict how well it will perform when installed in the field. Does an STC of 50 mean that a wall will reduce noise 50 decibels (dB) from one room to another? Not necessarily. Will walls having the same STC be acoustically equivalent in the field? Not necessarily. It all depends on the frequency content of the noise source and the performance of the material or system at each frequency.

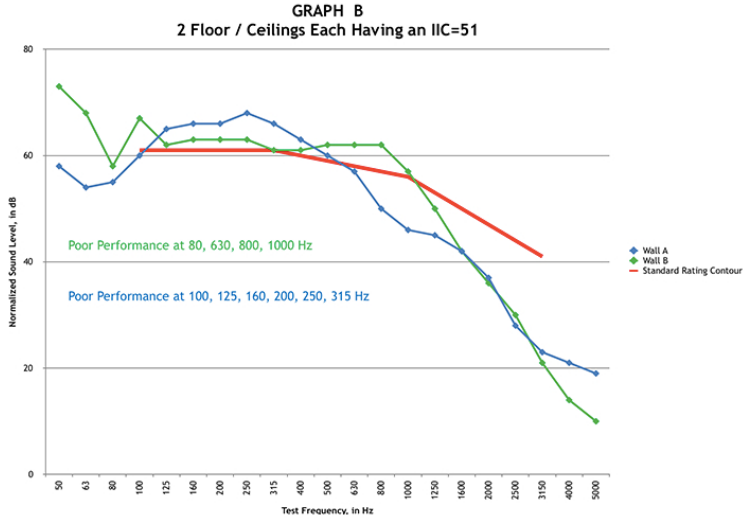
Graph A illustrates four walls all having an STC rating of 49, but there is up to 15-dB differences at the individual higher frequencies.

GRAPH A
4 Walls Each Having an STC=49





Graph B illustrates two floor-ceiling assemblies, each with an IIC rating of 51, but there are significant differences in their performance at several frequencies.



In conclusion, single number ratings DO NOT tell the whole story in many cases. Depending on the noise source, the results at individual frequencies will better predict the performance of an acoustical assembly or material.

UNDERSTANDING NFPA 285 PASS/FAIL CRITERIA

NFPA 285 determines the flammability characteristics of exterior, non-load-bearing wall assemblies/panels and the combustible components within wall assemblies/ panels of buildings that are required to be of non-combustible construction. The test utilizes a large two-story fire test apparatus with gas burners in the lower-story room and adjacent to a lower-story window opening. The performance of the exterior wall is determined on the basis of visual observations both during and after the test in conjunction with the temperature recorded. The exterior wall is considered as passing when the performance criteria specified below are met during the 30-minute fire exposure.

Flame Propagation: Exterior Face of Test Specimen

Flame propagation on the exterior face of the test wall shall not occur either vertically or horizontally beyond the area of flame plume impingement by the window burner flames. Flame propagation shall be determined to occur if any one of the following conditions is measured or observed:

- A temperature of 1000°F (538°C) is measured by any one of specific exterior face thermocouples.
- Flames emitting from the surface of the exterior face of the test wall reach a height of 10 ft. (3.05 m) or greater above the top of the window opening.
- Flames emitting from the surface of the exterior face of the test wall reach a horizontal distance of 5 ft. (1.52 m) or greater from the vertical centerline of the window opening.

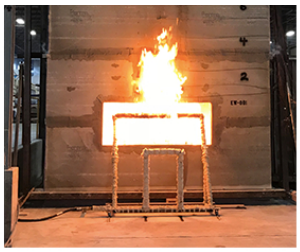
Vertical or Horizontal Flame Propagation: Combustible Components and Insulation

Flame propagation shall not occur either vertically or horizontally through the combustible components or the combustible insulation installed within the test specimen, as determined by temperatures measured by specific test wall thermocouples.

Temperatures in Second-Story Test Room
Temperatures measured 1 in. (25 mm) from the interior surface of the test specimen within the second-story test room shall not exceed 500°F (278°C) above the ambient air temperature at the start of the fire test.

Flames in Second-Story Test Room
Flames shall not occur in the second-story test room.

Flame Propagation to Adjacent Horizontal Spaces
Flames shall not occur beyond the intersection of the test wall and the side walls of the test apparatus.



NGC Testing Services offers a wide range of full-scale fire tests, including NFPA 285. Let us know if we can answer any additional questions or provide assistance in your future testing needs.

A TRULY GLOBAL ENTERPRISE

NGC Testing Services' facility has tested countless products from around the world. Here is a selection of items from countries outside the U.S. and Canada that that we have tested:

FIRE TESTING:

- Transit cars from Switzerland, Japan, Spain, Sri Lanka
- Building materials from Germany, Austria, Vietnam, Spain, Honduras, Columbia, Greenland, Netherlands, Israel, Jordan, Belgium, Taiwan, Singapore, Mexico, France
- Wall panels from England, Turkey, Brazil, Mexico
- Concrete slabs from Norway
- Doors from Bahrain
- Airport jet ways from Indonesia
- Fire barrier systems from South Korea
- Gun safes from China
- Office screens from Sweden

ACOUSTICAL TESTING:

- Concrete highway sound barriers from the Caribbean
- Doors from - United Arab Emanates
- Diffusers from United Arab Emanates
- Ceiling tiles from Germany, Poland, Mexico
- Flooring - from China, Switzerland, Germany, Spain, Ireland, Italy, Portugal, Latvia

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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 — let us know how we can help.

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OUR BROCHURE

WATCH
OUR VIDEO

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