**OVERVIEW**

Fenestration Testing Laboratory was established in 1994 and with over two decades of industry experience, we are the leading fenestration material testing laboratory. Our 39,000 sq.ft. free standing *air conditioned* facility offers a 32’ high ceiling in-door test area, equipped with a 6 ton overhead crane capacity. Fenestration Testing Laboratory can manage even the largest products in your assembly line with ease to reduce financial impact.

Our field and building envelope services we provide stand alone above the rest, constantly delivering results to contractors, builders, architects and building officials. With branch offices throughout the United States, Fenestration Testing Laboratory is able to provide these services at a competitive rate.

**OUR MISSION**

Our mission is to supply our customers with on-time delivery of test results and superiority services, which are of the best possible quality and consistently meet the performance criteria.

In order to live up to our quality policy and objectives, our laboratory shall execute tests efficiently, economically and on time with standards that consistently meet or exceed our customer’s requirements. This is accomplished through a continuing program to improve upon operational procedures and systems while striving to supply accurate and exact test results.

Come visit our modern testing facility and see what sets us so far apart from other labs. We’re open to serve you weekdays, from 7:30 am to 4:00 pm for quality, accuracy and assurance, demand the expertise of Fenestration Testing Laboratory.
ACCREDITATIONS

• Miami Dade County
• American Architectures Manufacturing Association (AAMA)
• State of Florida
• Texas Department of Insurance (TDI)
• National Accreditation Management Institute (NAMI)
• Window and Door Manufacturer Association (WDMA)
• Safety Glazing Certification Council (SGCC)
• Insulated Glass Certification Council (IGCC)
• Keystone Certification
• National Fenestration Rating Council (NFRC)
• ISO/IEC 17025 Accredited

CONFIDENTIALITY

Everyone here at Fenestration Testing Laboratory takes pride in the bond of confidentiality we share with our clients. All test results and reports are considered your personal property, and their contents shall not be divulged, except as per your instruction.

Staying in touch with our clients is top priority at FTL and when you have documents that need immediate attention, fax us, 24 hours a day at (305) 885-3329 or send it via E-mail at CLIENTSERVICES@FTL-INC.COM. Out of the area? Call us toll free at (844) FTL-TEST. For quality accuracy and assurance, remember to call Fenestration Testing Lab first!
TYPICAL PRODUCTS TESTED

- WINDOWS
- DOORS
- SHUTTER SYSTEMS
- WINDOW WALL SYSTEMS
- SKYLIGHTS
- FABRICATED WALL SYSTEMS
- EXTERIOR WALL SYSTEMS
- CURTAIN WALL SYSTEMS
- ROOF DECK PANELS
- RAILINGS
- SOLAR COLLECTORS
- GARAGE DOORS
- SECURITY SCREENS
- SOFFIT VENTS
- SIDING
- HARDWARE & COMPONENT
- FABRIC SCREEN SYSTEMS
- CANOPY
- BUILDING MATERIAL
TEST STANDARDS OFFERED

- AAMA/WDMA/CSA 101/IS.2/A440
- AAMA 506
- AAMA 450
- AAMA 1402
- AAMA 906
- AAMA 1304
- ANSI/AAMA 1600/IS.7
- AAMA 1606
- AAMA 1605.1
- AAMA 102-10
- AAMA 501
- AAMA 501.2
- AAMA 502
- AAMA 503
- AAMA 920
- AAMA 925
- AAMA 501.4
- AAMA 501.6
- ASTM e119
- ASTM e283
- ASTM e330
- ASTM e331
- ASTM e547
- ASTM E987
- ASTM F588
- ASTM F842
- ASTM e783
- ASTM e985
- ASTM e1592
- ASTM e2128
- ASTM e1105
- ASTM e90
- ASTM e546
- ASTM e2188
- ASTM e2189
- ASTM e2190
- ASTM C39
- ASTM e488
- ASTM e8
- ASTM B557M
- ASTM A370
- ASTM D638
- ASTM E72
- ASTM E1886
- ASTM E1996
- Florida Building Code
- Miami Dade County
- NFPA 257
- NFPA 251
- TAS 201
- TAS 202
- TAS 203
- TAS 100
- TAS 100(A)
- TAS 101
- TAS 102
- TAS 102(A)
- UL-9
- UL-10
- UL-263
- Dynamic Testing
- ASTM G155

BALLISTIC STANDARDS

- CFR’s Standards
- ASTM F1233
- Australian AS-243
- British BS-5051
- European EN1063
- European EN1522/EN1523
- German DIN 52-290
- MIL-SAMIT (NCEL-MIL-SAMIT)
- National Institute of Justice 0108.01
- State Department SD-STD-01.01
- Underwriters Laboratory UL752
- NU STD 0108.01 STANAG 4569 UL 752 EN 1063:2000 EN 1522 / 1523
- MIL-DTL-46063H MIL-DTL-46077G
- MIL-DTL-62474F MIL-H-44099A MIL-DTL-62474E MIL-P-46593B
- MIL-STD-2105B MIL-STD-2105C
- MIL-STD-810G MIL-V-43511C MIL-V-4311D
- FBI Test Protocol HPW-TP-0500.03 ITOP 1-2-505 ITOP 2-2-713
- ITOP 4-2-508 ITOP 4-2-805 SD-STD-01.01 G
These tests determine the performance of fenestration systems installed into buildings which are subjected to impact and cyclic static pressure differentials which may be representative of windborne debris and pressures in a windstorm environment. The performance determined by this test relates to the ability of elements of the building envelope to remain un-breached during a windstorm.

To perform large or small missile testing, an air cannon with an air pressure valve and control panel is used to fire variously sized timbers at specified velocities and impact locations. The cyclic loading apparatus is equipped to test products in excess of 300 psf. Our massive test walls, with the size of 50’ by 24’ high, can easily accommodate even the largest of products to be tested with ease.

Other test standards used for this testing are as follows:

- ASTM e1996
- ASTM e1886
- AAMA 506
- Texas Department of Insurance
- Miami Dade County TAS 201 & TAS 203

Typical Products Tested:

- Windows
- Entrance Doors
- Shutters
- Curtain Wall Systems
- Garage Doors
- Sliding Glass Doors
- Store Front Systems
- Window Wall Systems
- Skylights
- Roof Panels/Systems
- Wall Panels/Systems
- Fabric Screens
Ballistic Glass Testing

As we continue to grow our value added services, we proudly present to you ballistic glass testing. Please contact our client services department today for more information or to schedule testing.

Ballistic Standards

- CFR’s Standards
- ASTM f1233
- Australian AS-243
- British BS-5051
- European EN1063
- European EN1522/EN1523
- German DIN 52-290
- MIL-SAMIT (NCEL-MIL-SAMIT)
- National Institute of Justice 0108.01
- State Department SD-STD-01.01
- Underwriters Laboratory UL752
- NIJ STD 0108.01 STANAG 4569 UL 752 EN 1063:2000 EN 1522 / 1523
- MIL-DTL-46063H MIL-DTL-46077G
- MIL-C-44050A MIL-DTL-46077F MIL-DTL-46192C MIL-DTL-46193A MIL-DTL-46177C
  MIL-DTL-46593B
- MIL-DTL-62474F MIL-H-44099A MIL-DTL-62474E MIL-P-46593B
- MIL-STD-2105B MIL-STD-2105C
- MIL-STD-810G MIL-V-43511C MIL-V-4311D
- FBI Test Protocol HPW-TP-0500.03 ITOP 1-2-505 ITOP 2-2-713
- ITOP 4-2-508 ITOP 4-2-805 SD-STD-01.01 G
As we are the 1st and only laboratory in the entire East Coast, we proudly present to you fire resistance testing. Please contact our client services department today for more information or to schedule testing.

We pride ourselves as being able to deliver with the demand, so we have created a one-stop shop for all of your testing requirements.

Our vertical Full scale test furnace can accommodate samples up to 10 feet high by 10 feet wide and is fueled by natural gas that reaches temperatures up to 2600 degrees Fahrenheit. This is well beyond any temperature/time curve of the standard you are trying to satisfy.

FTL’s furnace is capable and flexible to perform at neutral, positive or negative pressures. This is capable by precision controlled dampeneners and the ability to control all burners for heat control. This is also accompanied with the help of Inswool® lining.

Historically, furnaces lined with bricks hold the heat and, in turn, is difficult to precisely control the fluxes of temperatures within the furnace. This also greatly increases the time between tests. With our furnace lining using Inswool® Ceramic Fiber modules, we are able to fully control the heat within the furnace with accuracy and precision. This also allows us to have little to no wait time before another sample can be tested within the furnace.

All heat measurements, inside the furnace and out the cold side of the sample, are compiled by state-of-the-art automatic calibrated data acquisition using numerous thermopiles and couplers. This in return is passed to the computer that will output a digital graph and then archive all test data for historical use and storage.

Once your fire resistance test is completed, and since your sample will be installed in a portable test frame wall, it will quickly be relocated to the hose stream test location for the final stage.

So, let’s get started! Contact Us today to schedule your product or to test drive our facility with a guided tour.

**Typical Products Tested:**
- Windows
- Entrance Doors
- Roll Up Doors
- Load Bearing Walls
- Non-Load Bearing
- Frame Assemblies
- Building Materials

**Typical Testing Methods:**
- ASTM e119
- UL-9
- UL-10
- UL-263
- UBC7-4
- UBC7-1
- ULCS-010
- NFPA 257
- NFPA 251
Thermal Simulations and Physical Thermal "Hot Box" Test

Following the lead of the 1st and only laboratory in the entire East Coast to have a Vertical Full Scale Fire Resistance Furnace, we proudly present to you Thermal Hot Box for measuring the thermal transmittance (U-Factor) or thermal resistance (R-Value) of building materials. Please contact our client services department today for more information, schedule a tour, or to schedule testing.

FTL’s thermal chamber has been designed to meet the specifications of a number of different test methods, practices and specifications. We are able to practice all the above standards in part to one of the largest hot boxes developed to this time and by using an array of powerful fans to create a perpendicular wind direction. Our Thermal chamber is capable of testing samples up to 10’ high x 10’ wide x 1’ deep.

In addition to testing per the normal standards, FTL is cable of utilizing our powerful cooling system to bring our climate side well below -20F (standard testing is 0F). The capabilities also exist to use our heating system on the climate side to have temperatures reach well above 120F. When completing your R&D at our facility, you will have a team of experts that have over 6 decades of combined experience.

Like they say, "seeing is believing". Before scheduling your products for testing, we encourage all existing and new clients alike to tour our state-of-the-art facilities.

We are as well a NFRC approved thermal simulation laboratory. Being accredited as an approved laboratory means savings to you before running your physical test. We pride ourselves on providing our customers with the most accurate and efficient services possible.

With thousands of window, glass, spacer, and gas fill options available, finding the most efficient combination is important. Let us help you determine which options will provide the best thermal performance in your designs. Performing thermal simulations will result in valuable information for your product development team. Covering all of your U-Value, R-Value, Condensation Resistance, Solar Heat Gain Coefficient and Visible Transmittance.

So, let’s get started! Contact Us today to schedule your product or to test drive our facility with a guided tour.

**Typical Products Tested:**
- Windows
- Entrance Doors
- Roll Up Doors
- Load Bearing Walls
- Non-Load Bearing
- Frame Assemblies
- Building Materials

**Typical Standards Practiced:**
- AAMA 1503
- AAMA 1504
- ASTM c1363
- ASTM 1199
- ASTM c1423
- NFRC 100-2010
- NFRC 102
- NFRC 200
- NFRC 400
- NFRC 500-2010
- AAMA 1503-09
- DASMA 105-2007
- FTC, 16 cfr Part 460
When water-leakage or moisture is in question, an investigation is needed before remedial action can be taken. As an expert in the fenestration field, Fenestration Testing Laboratory provides forensic investigation services to determine precise conclusion along with our expert opinion.

Fenestration Testing Laboratory provides these services to help architects, builders and consultants to verify that products are properly installed, identify the responsible individuals and prepare remedial plans.

Fenestration Testing Laboratory forensic investigations include:

- Visual site inspections of the interior and exterior to determine product deficiencies and workmanship
- Evaluate design concept and job specifications
- Reviewing construction change orders
- Field testing to simulate conditions where leakage or moisture was first present
- Consultation and preparation of remedial work
- Provide expert witness testimony; investigation of project documents, installation instruction contracts and warranty’s

**Typical Standards Practiced:**
- AAMA 511
- ASTM e2128
You make your roof system to cover and protect people’s lives, and we want to cover you! With decades of experience and with over 15 years in business, we are the premier choice for your Research and Development or product approval testing. As your partner in roof testing, we will deliver the service and services you expect to receive. We have a dedicated service staff to understand your goals that also has the knowledge to assist in developing your product to meet requirements, improving or redesigning existing product lines, litigation support and more.

In pursuit of creating a quality system that is recognized as an industry standard, we maintain high standings and accreditations; the ISO/IEC 17025, Miami-Dade Building code and the Florida Building code to name a few. We can only accomplish this by experience in our industry. This experience has evolved over a decade to include a start-of-the-art laboratory. This laboratory host in-house services that cover every aspect of your testing needs. We encourage you to test drive our laboratory in person with a tour of our 39,000 Square feet facilities along with our dedicated staff members that will be supporting you every step of the way.

It does not matter what components your system consist of. Our scope of accreditation has virtually every angle covered. Not sure if it’s covered? No problem. Contact our friendly client services department now for a fast answer and to experience the better resource, the FTL way!

We also conduct performance testing including:

- Wind & Wind-driven rain resistance
- Wind-uplift resistance
- Static & cyclic pressure resistance
- Water & air penetration resistance
- Impact resistance

Typical Products Tested:

- Roof Coverings
- Weather Barriers
- Ventilation Systems
- Coatings
- Adhesives
- Insulation Barriers
- Radiant Barriers
- Fasteners

Typical Testing Method:

- TAS 100
- TAS 100(A)
- TAS 101
- TAS 102
- TAS 102(A)
- TAS 105
- TAS 106
- TAS 125 (Up coming)
- TAS 126
- UL 580
- Adhesion Testing
- Air Infiltration Test (TAS 202)
Fenestration Testing Laboratory offers professional engineering services to respond to our clients needs. The most important asset Fenestration Testing Laboratory offers our customers is integrity; by combining extensive knowledge and hands on experience, our professional engineering team expertise will provide our customers with all their engineering requirements.

Assuring our customers that all jobs are based on interpretations, whether it is field inspections, witness testing, installation analysis or reviewing existing designs and drawings, it’s all documented with a signed and sealed report from our engineers. Searching for the performance of fenestration products and building materials are valuable only if they are properly obtained, analyzed, and applied.

**These professional engineering services include:**

- Test Protocol’s Analysis
- Expert Court Testimony
- Comparative Analysis
- Comparative Analysis for downsized samples of similar construction
- Product Certification
- Threshold Inspection
- Structural Analysis
- Autocad Services
- Project Consulting Services
- Expert Court Testimony
Today’s growing concern about the effect of sound on human performance is leading to increased regulation. Consequently, accurate acoustical performance measurement is critical for certification of building products and materials. Sound control on the interior of buildings is also becoming more of a factor in building design for office buildings, manufacturing facilities, and multi-family housing.

Acoustical performance of building products, components, and systems is an important consideration for engineers, architects, and building owners. This is especially true in highly populated cities; the demand for efficient noise reducing building products in these areas is on the rise.

Fenestration Testing Laboratory uses recognized methods for testing:

**Sound absorption** - Measures a material’s ability to control reflected sound and reduce noise levels, control reverberation room acoustic chamber for large objects wall panels, fenestration products, insulation, foam, or building materials.

**Sound Transmission** - The measured reduction in noise level after sound passes through a material. This measure is used to rate the effectiveness of a material to attenuate sound. These measurements either alone or in combination used to rate fenestration products and materials for comparing or modifying to meet sound specifications or requirements.

**Typical Products Tested:**
- Windows
- Doors
- Skylights
- Tiles
- Walls
- Curtain Walls

**Typical Testing Methods:**
- ASTM e90
- ASTM e1332
- ASTM e1425
- ASTM e2235
- AAMA 1801
Field testing is conducted to ensure the quality of installation and the performance of the product; also to verify that the fenestration products are in compliance with architect and industry specifications. This is achieved by testing for air infiltration, water leakage, and structural performance. The field tests conducted and the parameters of tests are generally prescribed by architects, engineers and industry specifications.

Fenestration Testing Laboratories thorough understanding of field testing and field inspections will ensure architects, building owners, consultants, glazing installers, and contractors that they are meeting contract obligations for new construction or renovation. This sequence of actions will reveal valuable insights to help resolve any issues.

Fenestration Testing Laboratory ability to dispatch technicians to the job site at any time within 24 hours makes it easy and cost effective for our clients. FTL continuously stays in touch with our clients to review job specifications and drawings to confirm that the appropriate test procedures are specified. Fenestration Testing Laboratory takes care of test equipment, equipment calibration, and swing stage or scaffolding, if required, to ensure that work proceeds effortlessly.

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Certification of your tempered, laminated or insulated glass ensures their performance and therefore their widespread use in the building industry.

Our large environmental climate controlled insulated glass test facility can accommodate multiple specimens. Insulated glass samples are subject to environmental exposure to measure their performance for seal durability, weathering, and fogging; Insulating glass sample endure a combined total of 16 weeks for exposure to extreme temperature variations, ultraviolet exposure, and humidity.

FTL undertakes thorough performance characterizations before, during, and after temperature cycling to describe accurately any changes that occur during the different phases of testing. Some changes are transitory lasting only during a phase of testing; others are permanent due to irreversible damage to critical components that affect the overall system performance.

Certification of your insulated glass ensures their performance and therefore their widespread use in the building industry.

test equipment includes:

• Weather cycle chamber (WCT) freeze/heating, rain and UV
• High humidity/high temperature chambers (HHC)
• 95-100% RH and elevated temperature in (HHC)
• Volatile fogging chambers (VFT) elevated temperature with UV
• Dew/frost point test equipment
• (cold cups/dry ice with thermocouples & indicators)
• Digital indicators and controllers

Typical Products Tested:

• Insulated Glass Panels
• Glass for Certification

Typical Testing Methods:

• ASTM e2188
• ASTM e2189
• ASTM e2190
• ASTM e546
• ASTM e576
• AAMA 501.5
• AAMA 501.6
• ANSI z97.1
• CAN/CGSB 12.1-M90
• CPSC 16 cfr 1201
• Condensation Evaluation
Fenestration products serve as openings in the building envelope. It is imperative that windows and doors are weather tight and structurally sound. This test method is used to determine the rate of air leakage, water resistance, structural performance, forced entry resistance, among other tests. The test results facilitate manufacturer, consultants and code officials the ability to ensure that the product will meet building design and building codes.

Air filtration is determined by a high precision mass flow meter while the specimen is subjected to a constant air pressure differential. For water resistance tests, specimens are checked for water penetration under cyclic and static air pressure, which simulates differing storm conditions. Fenestration Testing Laboratory test apparatus ensures that all test samples receive the necessary water application at the required test pressure conditions.

Test results determine if water penetration occurs inside the product or wall cavity. For the uniform load tests, the specimen’s structural integrity is evaluated while prescribed static high pressure differential is created across the specimen, simulating both positive and negative wind loads. Fenestration Testing Laboratory uses precise digital instrumentation to measure permanent set and deflection readings under ratios established by the standard.

**Typical Products Tested:**
- Windows
- Entrance Doors
- Shutters
- Curtain Wall Systems
- Garage Doors
- Sliding Glass Doors
- Store Front Systems
- Window Wall Systems
- Skylights
- Roof Panels/Systems
- Wall Panels/Systems
- Enclosures
- Fabric Screens

**Typical Testing Methods:**
- ASTM e283
- ASTM e330
- ASTM e331
- ASTM e547
- ASTM f842
- ASTM f588
- ASTM e987
- AAMA 1304
- AAMA/WDMA/CSA 101/IS.2/A440
- Miami Date County TAS 202
Fenestration Testing Laboratory offers architects and designers comprehensive mock-up testing capabilities to ensure their curtain walls are properly designed and will function as expected. Fenestration Testing Laboratory is not restricted; your largest mock-up can be constructed and tested outdoors. The results of our testing are used to validate the design, workmanship, material selection, and to gain the approval of clients, architects, and or consultant.

Tests are performed according to ASTM, AAMA, ANSI, CPSC, Architectural Project Specifications, and other standards and programs. Tests can involve precast structures, metal/glass, exterior skins, live or dead loads. Custom test conditions can be devised by Fenestration Testing Laboratory experts to measure other performance attributes.

**Test methods and specifications used to obtain data:**
- Wind Resistance
- Air Infiltration
- Static & Dynamic Water Resistance
- Condensation
- Structural Loading
- Thermal Cycling
- Impact Safety
- Acoustics
- Interstory Displacement (vertical movement)
- Dynamic Seismic Performance (lateral movement)
- Thermal Transmittance
- Sealant and Gasket Durability
- Impact TAS 201
- Cyclic Load TAS 203

**Typical Products Tested:**
- Curtain Wall Systems
- Window Walls

**Typical Testing Methods:**
- ASTM E283
- ASTM E331
- ASTM E330
- AAMA 501.1
- AAMA 501.4
- AAMA 501.5
- AAMA 501.6
- AAMA 501.7
- Condensation Evaluation

**Test equipment includes:**
- Pratt & Whitney supercharged airplane engine as air blower
- Water spray racks
- Air flow & pressure control panels with reversible blowers
- Laminar flow elements
- Liquid nitrogen distribution systems
- High pressure hydraulic equipment
- Dynamic seismic racking equipment
The characterization of materials is the single most important step in understanding the processing-structure property relationship, which often holds the key to successful problem-solving or product development. The Analytical Division was established to help clients develop solutions to challenges in manufacturing, quality assurance, and research and development.

Today, we provide materials testing, characterization, and forensic laboratory services for a wide range of commercial, industrial, regulatory, and law enforcement clients.

Our areas of expertise include steels and high-temperature alloys, metals and mechanical behavior of materials and materials selection evaluation and processing and characterization of coatings and thin films, to name a few.

Our company-wide focus on customer service makes no project too large or too small. Our corporate research and development capabilities allow us to bring new methodologies on line quickly to meet new industry challenges and client needs. We are committed to providing reliable, defensible data in a standardized and user-friendly format. Rapid turnaround and competitive price make the dependable results you get that much more valuable.

**Typical Products Tested:**
- Windows
- Doors
- Shutters
- Garage Doors
- Metal
- Concrete
- Plastics
- Glass
- Hardware
- Anchors

**Typical Testing Methods:**
- AAMA 907
- AAMA 908
- ASTM a370
- ASTM b117
- ASTM b368
- ASTM b557M
- ASTM c39
- ASTM c42
- ASTM c140
- ASTM c1167
- ASTM d638
- ASTM d1761
- ASTM d2843
- ASTM d7147
- ASTM e8
- ASTM e70
- ASTM e72
- ASTM e136
- ASTM e488
- ASTM e529
- ASTM e754
- ASTM e987
- ASTM f588
- ASTM f606
- ASTM f842
- ASTM g85
- ASTM e985
- AAMA 906
- ANSI z97.1
- CPSC 16 cfr 1201
- ASTM G155