Western Fire Center, Inc.
Standard Fire Testing Capabilities

WFCi's Office and Laboratory in Kelso, Washington.

Western Fire Center, Inc. (WFCi) started in June of 1994 and is the only large-scale fire test facility in the Western United States. Our knowledgeable staff has 30 years of experience in the fire testing and certification business.

IAS ACCREDITED
TL-180

WFCi is accredited under the International Accreditation Service (IAS) Acceptance Criteria for Laboratory Accreditation (TL #180). This accreditation gives our clients confidence that we follow the highest standards in testing and quality procedures.

WFCi continues to grow and expand its list of testing capabilities and its roster of satisfied clients.

Convenient Location

WFCi is conveniently located at 2204 Parrott Way in Kelso, Washington, 40 minutes north of the Portland/Vancouver area and 2.5 hours south of Seattle. We are easily accessible by car (minutes away from I-5), train (a train station in Kelso is also only minutes away), and small aircraft (Kelso airport is directly across the street from us). Our surrounding area also features the Port of Longview, one of the largest ports in the northwest, directly on the Columbia River.

WFCi is Accredited to Test to the Following Standards:

ASTM E 108, ASTM E 119, ASTM E 136, ASTM E 152, ASTM E 814, ASTM E 1537, ASTM E 1590, ASTM E 1623, ASTM E 2010, ASTM E 2074, ASTM D 1929, ASTM D 2898, CA TB 116, CA TB 117, CA TB 121, CA TB 129, CA TB 133, DASMA 107, ISO 834, ISO 9705, NFPA 251, NFPA 252, NFPA 256, NFPA 257, NFPA 265, NFPA 266, NFPA 267, NFPA 268, NFPA 286, UBC AC-107, UBC 7-1, UBC 7-2, UBC 7-4, UBC 7-5, UBC 8-2, UBC 15-2, UBC 26-2, UBC 26-3, UL 9, UL 10B, UL 10C, UL 72, UL 263 UL 555, UL 790, UL 1056, UL 1479, UL 1715, UL 1895, and UL 1975.

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info@westernfire.com | 1.877.423.1401

WFCi Furnaces: Full Scale

Full-Scale Vertical Furnace

WFCi's Full Scale Furnaces are used in testing of Building Materials, Fire Door Assemblies, Floor and Ceiling Assemblies and Fire Window and/or Frame Assemblies in accordance with various standards including ASTM E-119, E-152, E- 814, E-2010 and E-2074, UL 9, 10B, 10C, 72, 263, 555, and 1479, UBC 7-1, 7-2, 7-4, 7-5, and 26-2, NFPA 251, 252, and 257, and ISO 834.

Both furnaces are fueled by Natural Gas and can be run under positive or negative pressure conditions per the standard being used.

Temperature measurements are recorded by calibrated data acquisition units which pass the readings to a computer for graphical display and storage. The vertical furnace (pictured top left) is facing a large roll up door through which samples can quickly be transported to the hose stream area. The horizontal furnace (pictured bottom right) is 7 feet deep and with a collar can be expanded to test columns. It will accommodate samples up to 14 feet wide by 18 feet long. Both furnaces allow for sample loading, per the applicable standard, and both are capable of following the new standard hydrocarbon curve.

Full-Scale Horizontal Furnace

WFCi's furnaces are lined with Kaowool for ease of operation and quick turn-around time, and designed with special burners to create historical lazy yellow luminous diffusion flames under positive pressure conditions so that the sample performance is similar to historical performance under negative pressure.

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WFCi Furnaces: Research Scale

WFCi's Research Scale Furnaces are used in testing of Building Constructions, including Floor and Ceiling or Deck Constructions, and Fire Door and Window Assemblies in accordance with various standards including ASTM E-119, E-152, E-814, E-2010 and E-2074, UL 9, 10, 72, 263, 555 and 1479, UBC 7-1, 7-2, 7-4, 7-5, and 26-2, NFPA 251, 252, and 257, and ISO 834.

Research-Scale Vertical Furnace

The principle deviation from these standards is sample size, allowing for smaller, cheaper tests for research purposes to determine a product's viability before investing the time and expense of running a full scale test.

Both research scale furnaces at WFCi are fueled by Natural Gas and can be run under positive or negative pressure conditions per the standard being used. Temperature measurements are recorded by calibrated data acquisition units which pass the readings to a computer for graphical display and storage. A large roll up door is located nearby, through which the sample can quickly be transported to the hose stream area. Both furnaces have windows in the sides to allow viewing of the specimen's exposed surface and the taking of photographs during testing, and both are capable of following the new standard hydrocarbon curve.

Research-Scale Horizontal Furnace

Like the full scale furnaces, WFCi's research scale furnaces are lined with Kaowool for ease of operation and a quick turn-around time, and designed with special burners to create historical lazy yellow luminous diffusion flames highly controllable pressure conditions.

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Standardized Testing for Roofing Materials

WFCi performs testing on roofing materials in accordance with ASTM E-108, UL 790, UBC 15-2, and NFPA 256. These standards are for the testing of roofing materials when exposed to fire originating from sources outside a building on which the coverings may be installed. The tests included in these standards and performed at WFCi are the intermittent flame exposure test, the spread of flame test, the burning brand test, the flying brand test, and the rain test.

WFCi's Roof Testing Apparatus

The essential elements of the Fire Test Apparatus used for tests of roof coverings include a test roof deck mounted on an adjustable pitch steel frame, a gas burner or wood brand ignition source, a wind tunnel duct, and variable speed fans, specially designed for our apparatus to create proper and uniform adjustment of airflow over the specimen.

WFCi's Rain Room

WFCi's rain room, used for Accelerated Weathering tests, is 480 square feet with ceilings 6'3" high. The room is used in tests to determine the weatherability of products such as wood that has been treated with fire-retardant. The sample is exposed to periods of rain and heat in accordance with test standards. The room is also equipped to expose the sample to UV, simulating intense sunlight, in accordance with test standards. Standards for Accelerated Weathering used at WFCi include UBC AC-107 and ASTM D-2898.

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Material Properties Testing

The Intermediate Scale Calorimeter (ICAL), is used in tests of heat release and ignition properties of materials (such as ASTM E1623, NFPA 268, and UL 1975), as well as for litigation and research and development testing. The ICAL has the capability of generating far more fundamental fire performance data than past tests have been able to.

WFCi's Intermediate Scale Calorimeter

The ICAL exposes the sample to flux ranges typical to fires and characterizes its performance, creating data necessary for CFD fire models, such as those using FDS, or Zone models, such as those using CFAST. It can also test substantially larger samples than its primary competition, the CONE calorimeter.

Data collected in an ICAL test includes: heat release, smoke release, char rate, gas release, ignitability, heat of combustion, mass loss rate, gasification, specific heat (Cp), thermal conductivity (k), diffusivity, surface temperature, emissivity, and ignition temperature.

WFCi's Hood Calorimeter

The hood calorimeter allows WFCi to do a variety of testing while recording massive amounts of important data such as heat release, heat of combustion, and smoke release. It is used in many tests, including ICAL, Room Fire Testing (UBC 26-3), Furniture and Mattress Testing (ASTM E 1537 and E 1590), liquid pool fire, pallets of materials, and full-scale reconstructions for litigation cases, including building re-creations. The calorimeter hood is consistent in design and operation with ASTM E603, *Standard Guide for Room Fire Experiments*.

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Ignition Properties

WFCi's Ignition Properties Furnace

WFCi uses an Atlas Setchkin vertical tube furnace for Ignition Properties and Non-Combustibility Testing, notably ASTM E136 and D1929. These standards cover the determination, under specified laboratory conditions, of combustion characteristics of building materials and the flash ignition temperature and spontaneous ignition temperature of plastics.

This particular furnace has a variable temperature range from ambient to 750 degrees Celsius (ºC) and can simulate a low temperature smoldering type scenario as well as a higher temperature-burning scenario that is favorable.

Contact WFCi with Your Questions!

We would be pleased to work with you. If you have any questions about the facilities and services available at WFCi, please do not hesitate to call us at our toll-free number, 1-877-423-1401, or email us at info@westernfire.com. Further details about our company and services can be found on the web at www.westernfire.com.


A UBC 26-3 Room Corner Test at WFCi


A Full-Scale ASTM E 2010 at WFCi


A Furniture Ignition Test at WFCi

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