Combustion Testing

Performing certifications, serving as technical experts on codes and standards, and creating new requirements for new technologies

UL has been in the combustion testing and certification business for over 80 years. Located in the US and Canada, UL’s new state-of-the-art combustion laboratories provide a variety of testing services for combustion appliances and is a one-stop-shop for safety, performance, and reliability testing.

Combustion Testing Capabilities (Natural Gas, Propane, Butane, Blended Gases, Fuel-Oil, & Solid-fuel)

- Global Safety Certification
- Global Energy Efficiency regulations
- ENERGY STAR®
- Custom performance testing

Combustion Appliances and Equipment

- Burners
- Boilers
- Water Heaters
- Furnaces
- Unit Heaters
- Construction Heaters
- Heavy Duty Heaters
- Domestic Cooking Appliances
- Food Service Equipment
- Outdoor Cooking Appliances
- Hearth Products
- Barbeque Grills
- Patio Heaters & Decorative Appliances
- Camping Equipment
- Clothes Dryers

State-of-the-Art Facility

- Test capabilities of up to 2,500,000 Btu/hr input rating
- Hydronic test capabilities of up to 50 gpm water flow
- Precisely controlled environmental conditions
- 50 or 60 Hz
- 0 to 480 VAC
- 0 to 100 Amps

For more information, please contact UL.ProductEngineering@ul.com
HVAC/R

Combustion Testing

State-of-the-Art Equipment
• Mass flow meter measurement for water flow
• RTD temperature measurement
• Power analyzing with standby power measurement
• Automated data acquisition system
• Combustion analysis including CO, CO₂, O₂, and NOx
• Gas chromatograph and gas calorimeter capability
• Water hardness adjustment
• Gas Mixing System to provide a variety of test gases

Product Safety Standards
• CSA B140.0
• CSA B140.2.1
• CSA B140.4
• CSA B140.7
• CSA B140.12
• CSA C22.2 No. 110
• CSA C22.2 No. 165
• CSA CAN1-3.1
• CSA/CGA 3.4
• UL 174
• UL 1453
• UL 834
• UL 295
• UL 296
• UL 296A
• UL 726
• UL 732
• UL 791
• UL 795
• UL 2096
• UL 2790
• Z21.1
• Z21.10.1/CSA 4.1
• Z21.10.3/CSA 4.3
• Z21.13/CSA 4.9
• Z21.17/CSA 2.7
• Z21.47/CSA 2.3
• Z21.5/CSA 7.1
• Z21.5.2/CSA 7.2
• Z21.50/CSA 2.22
• Z21.56/CSA 4.7
• Z21.57
• Z21.58/CSA 1.6
• Z21.60/CSA 2.26
• Z21.61
• Z21.63/CSA 11.3
• Z21.72/CSA 11.2
• Z21.73/CSA 11.1
• Z21.84
• Z21.86/CSA 2.32
• Z21.88/CSA 2.33
• Z21.89/CSA 1.18
• Z21.96/CSA 11.6
• Z83.11/CSA 1.8
• Z83.18
• Z83.19/CSA 2.35
• Z83.20/CSA 2.34
• Z83.4/CSA 3.7
• Z83.8/CSA 2.6
• Other Standards as needed/requested

For more information, please contact UL.ProductEngineering@ul.com
## Combustion Testing

### ENERGY STAR® & Performance Testing

#### Boilers
- 10 CFR Part 430, Subpart B, Appendix N (Electronic Code of Federal Regulations)
- ASHRAE 103 Method For Testing For Annual Fuel Utilization Efficiency Of Residential Central Furnaces And Boiler
- IEC 62301 Household electrical appliances – Measurement of standby power. This is applicable to multiple types of products. Boilers, Furnaces, Dishwashers, Clothes Washers and Dryers.
- CSA P.2 Testing method for measuring the annual fuel utilization efficiency of residential gas-fired or oil-fired furnaces and boilers
- 10 CFR Part 431, Subpart E (Electronic Code of Federal Regulations)
- 10 CFR Part 431, Subpart G (Electronic Code of Federal Regulations)
- BTS-2000 Method to Determine Efficiency of Commercial Space Heating Boilers

#### Furnaces
- 10 CFR Part 430, Subpart B, Appendix N (Electronic Code of Federal Regulations)
- 10 CFR Part 430, Subpart B, Appendix AA (Electronic Code of Federal Regulations)
- ASHRAE 103 Method For Testing For Annual Fuel Utilization Efficiency Of Residential Central Furnaces And Boilers
- CSA P.2 Testing method for measuring the annual fuel utilization efficiency of residential gas-fired or oil-fired furnaces and boilers

#### Clothes Dryers
- 10 CFR 430, Subpart B, Appendix D (Electronic Code of Federal Regulations)
- 10 CFR 430, Subpart B, Appendix D1 (Electronic Code of Federal Regulations)
- 10 CFR 430, Subpart B, Appendix D2 (Electronic Code of Federal Regulations)
- CAN/CSA C361 – Test Method for Measuring Energy Consumption and Drum Volume of Electrically Heated Tumble-Type Clothes Dryers
- CAN/CSA P.5 – Test Method for measuring per-cycle energy consumption of residential gas clothes dryer

#### Water Heaters
- 10 CFR Part 431, Subpart G (Electronic Code of Federal Regulations)
- CSA P.3 Testing Method for Measuring Energy Consumption and Determining Efficiencies of Gas-Fired Storage Water Heaters
- IEC 60379 Methods for Measuring the Performance of Electric Storage Water-Heaters for Household Purposes

#### Pool Heaters

---

For more information, please contact UL.ProductEngineering@ul.com

UL and the UL logo are trademarks of UL LLC © 2015
**HVAC/R**

**Combustion Testing**

**Contributory Services**

- Reliability Engineering Services
- Life Testing
- Accelerated Life Testing
- Highly Accelerated Life Testing
- Multi-Environment Over-Stress Testing
- Prototyping
- Food Equipment Sanitation Services
- Performance and Health Effects Testing for Plumbing Products
- Functional Safety
- Environmental Product Declarations, Advisory Services and Claims Validations.
- Indoor Air Quality assessment & measurement
- Custom Training & Knowledge Services
- Regulatory and Compliance Essentials training courses.
- Limited Production Certification Services
- Workplace safety expertise
- Extensive In-House EHS Course Library
- Software solutions for occupational medicine clinics, health professionals, and EHS Management.

For more information, please contact UL.ProductEngineering@ul.com