Predictive modeling for flame tests on communications cables

As the global safety science leader recognized around the world for our expertise with fire safety and certification services, UL provides large- and small-scale flammability testing for certification to national, international, regional and industry standards and requirements.

Our predictive modeling for flame testing is an effective tool to gauge large-scale flame test performance of communications cables based on small-scale cone calorimeter testing. A cone calorimeter can analyze short lengths of cables to determine how readily materials ignite and how much smoke they generate. These models provide a cost-effective means to help predict real-world fire risks with a high degree of confidence and accuracy, especially during the research and development process.

Tests can determine additional fire characteristics such as ignition times, weight loss, heat and smoke release rates, and heat of combustion.

Two models are available for communications cables and can apply to both copper and fiber optic cables:

- Plenum predictive model — To predict plenum flame test compliance of cables to NFPA 262, the Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces
- Riser predictive model — To predict riser flame test compliance of cables to UL 1666, the Standard for Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts

Cone calorimeter testing

UL's large-scale flame test and predictive model services.

Service	Large-scale flame test	Cone calorimeter predictive model
Length of cable	Hundreds or thousands of feet	20 feet
Convenience and ease of customs clearance	Long lengths of cable typically provided in reels	A short length of cable; may be cut from a finished cable assembly
Sample shipping	Higher cost	Low cost

Note: Flame test data generated using the predictive model does not qualify as a basis of certification.

Program benefits

The predictive models using cone calorimeter test results can save time and costs associated with large-scale flame testing and serve as an excellent tool for stakeholders with a variety of needs:

Cable manufacturers

- Initial qualification of prototype constructions
- New materials development
- Materials selection and substitution
- Product quality assurance
- Less material/cable needed for testing
- Research testing on potential constructions being designed for certification

Cable distributors and installers

- Simple means to check products' compliance with safety standards
- Counterfeit product identification
- New supplier qualifications
- Private label program development
- Post-installation investigations using minimal amounts of cable

For more information, please contact us or visit UL.com

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