

Full Scale Fire Test Laboratory

● Outline

Small scale fire tests is useful for understanding specific phenomena such as material combustibility. However, actual fires is complicated and various phenomena are interacted such as fire propagation within a room, fire spread to upper floor, and smoke movement within building, etc. Therefore, it is essential to clarify those complicated fire phenomena with full scale fire tests.

This laboratory is designed to mainly perform research on various phenomena related with building fire and fire safety measures, with various scale fire tests. It performs experiments such as fire tests on building materials/products used at interior and/or exterior of buildings, fire tests on actual combustibles/furniture located in a burn hall, fire resistance tests on joint of structures, and tests on smoke control/movement using the facility itself.

The laboratory consists of a burn hall with 720m² floor area and 27m ceiling height, observation rooms and 7 story smoke control test tower equipped with several burn rooms, two stair-wells, an air supply shaft, smoke exhaust shaft and mechanical fans.



Fire test hall with smoke exhaust hood used for measuring heat, smoke and gas generated from combustion. (7 story smoke control test tower is seen at right rear.)

■ Full Scale Fire Tests

It is essential to understand the interaction of fire phenomena during the fire. Fire tests are performed with heat, smoke and gas generated being measured in order to technically comprehend how fire will spread from the place of fire origin to entire room.



Fire Tests on building materials/products used at interior and/or exterior of buildings



Car Fire Test



Fire Test on Office Room

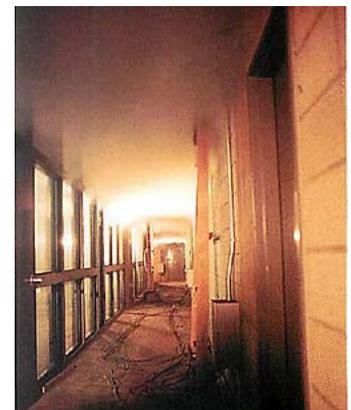
■ Test on fire resistance of structures

In the burn hall, fire resistance test on joint of structures can be performed, which are difficult to conduct by ordinary furnaces.

■ Test on smoke movement and control

7-story staircases, long corridors, etc. are installed in this laboratory to study smoke movement under various conditions of fires and to investigate the efficiency of different kinds of smoke control systems.

Results of fire tests have been applied to technologies and building design guidelines for improving building fire safety, such as evaluation of building materials/products used at interior and/or exterior of buildings, development of smoke control system, etc.



Smoke movement test at corridor