

A series of 60 fire tests were recently conducted in an experimental enclosure consisting of a 19 m long corridor and three rooms, employing steady or growing propylene fires. Two rooms, including the burn room, were located at one end of the corridor and the third room was located at the opposite end. This paper focuses on smoke propagations observed in the corridor under various fire conditions.

Tests with open door to the burn room displayed a forward smoke front propagating away from the burn room under the corridor ceiling as well as a return from filling most of the remaining clear space above the floor. There were only minor effects on forward front propagation resulting from open or closed doors to the other rooms, open or closed window in the burn room, or forced ventilation conditions examined.

With closed door to the burn room, the propagation speed of the smoke front was such reduced and sensitive to the disposition (closed or open) of a window in the burn room. The fire intensity or growth rate had marked effects on the propagation speed of the smoke front, consistent with fire scaling principles.

A simple integral model of smoke propagation appears to predict forward front propagation quite well.