

Ten sets of upholstered chairs were obtained. One chair out of each set was tested in the ASTM room, two chairs out of each set were tested in the furniture calorimeter, and four chairs from each of six sets in the California Technical Bulletin 133 (TB133) room.

The chairs in the different sets varied only in the type of fabric, type of foam, and whether or not there was a fiberglass interliner present. The size, frame and style remained constant.

Some of the chairs were ignited with the standard TB133 newspaper ignition source. The others were ignited by a gas burner designed to simulate the newspaper ignition source.

The rooms were instrumented to measure the total heat release rate of the chairs by oxygen consumption. It was found that;

1. similar results were obtained in the TB133 and ASTM rooms,
2. a total heat release rate of 65 Kw in either of the rooms or in the furniture calorimeter was equivalent to the failure criterion of a 1110C (2000F) temperature rise 25 mm below the ceiling and directly above the burning chair in the TB133 test and
3. below 600 Kw the heat release rates of the chairs measured in the rooms were the same as those in the furniture calorimeter.

The combinations of fabric, fiberglass interliner and foam were also tested in the Cone calorimeter. Correlations are presented between the full scale and bench scale results.

Calculations of the room temperatures, using Hazard I and the measured heat release rates, are also shown.