The capability of fire fighting foams to resist heat radiation and to suppress fuel vapours have been investigated.

Three test series have been conducted using foams of standard quality of the type; synthetic (D), AFFF, fluoroprotein (FP), AFFF-AR and FFFP-AR. In total, approx. 180 tests have been conducted.

The first test series was conducted to study the behaviour of a foam layer when subjected to heat radiation. Foam was generated with a test nozzle and collected in a glass beaker. Heat radiation onto the foam layer was generated using a cone radiator.

During each test, the foam destruction was recorded visually and the proportion evaporated and drained, was recorded by continuous weight measurements. Radiation levels used in the tests were 0-35 kW/m2.

The second test series was conducted in the same manner as above but with a layer of fuel in the glass beaker. A small pilot flame was located just above the foam surface and in addition to the previously mentioned recordings, time to ignition was measured.

In the third test series, a limited number of tests were conducted to evaluate the vapour suppression capability of the foams. The fuel was in the series placed in a standard reaction flask which was then covered with a layer of foam. The fask was sealed and the vapour accumulation above the foam layer was measured using a standard explosimeter.

The two first test series have shown that the rate of evaporation from the foam layer seems to be almost the same for all types of foams and proportional to the radiation level, approx. 15 gr /min, kW. This means that 65 %-75 % of the incoming radiation is used in the evaporation of the foam.

The drainage properties vary considerably among the foams tested and at a radiation level of 35 kW/m2, the rate of drainage varies between 1000 and 4000 g/min, m2 for the foams tested.

The foam destruction increases rapidly from almost zero to approx. 0.5-1.5 cm/min at 5 kW/m2. The destruction rate then seems to increase more slowly, proportionally to the radiation, to approx. 1.5-2.5 cm /min at 35 kW/m2.