

English Summary

Fires in timber buildings cause higher renovation costs compared to solid buildings from the point of view of insurance companies in Germany. The influence of different timber constructions according to the degree of damage after fires doesn't still exist. In the premiums of the insurance companies the integrity of wall- and floor assemblies and heat insulation of wood based structural components are not included.

Because of these facts first analyses and evaluation of fire spread in timber-frame buildings were carried out in cooperation with the Bavarian insurance company in 2002/03. The fire spread in timber houses was analyzed after fire exposure from the fire origin until the beginning of fire-fighting. Thereby could be identified weak points, which have an important influence to the fire spread and the degree of damage.

The pre-examinations were the basis of the current research project "evaluation of fire spread in timber houses", which was financed by the Bavarian Ministry of Education, Research and Art, Bavarian Insurance Company and Association of Public Insurance Companies. In the project were analyzed:

- the fire spread paths with associated characteristics of damage
- the fire behaviour of wall and ceiling in timber construction elements with insulation made of rock-, glass-, wood fibre as well as cellulose
- the leakage rate of joints between wall and ceiling assemblies
- the behaviour of services in timber construction elements

To create adequate (risk-fairly) classifications the building construction, the services and additional safety measures have been considered depending on different fire scenarios.

Within the project two real fire tests in a full scale timber house were realized in the „fire protection campaign“. The tests opened the possibility to study the fire behaviour of building components, connections and the degree of damage after fire exposure. Inside the walls and ceilings the temperatures relating to the duration of fire were measured.

Further small scale fire tests with renewable insulation materials made of wood fibre and cellulose were carried out to develop extended construction principles in comparison to insulation made of rock- and glass fibre.