A Study on the Improvement of flame retardancy of EPS

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Recently, there is an increasing trend to use insulating materials having excellent thermal conductivity performance as the building's energy saving design standards have been strengthened with eco-friendly policy. Insulating materials for buildings require excellent insulation performance, water resistance and above all excellent flame retardancy. In particular, the preferred external insulation method is covers the entire building, and is having excellent insulation performance. However, present external insulation method is also having risk in that flame can propagate in case of fire quickly; therefore the efficiency of flame retardancy with insulation is very crucial issue on these days. A facile flame retardant layer onto EPS (expanded polystyrene), which is mainly composed of smart material was showed the excellent insulation and flame retardancy efficient in terms of HRR (heat release rate), PHR (peak heat release rate) and THR (total heat release rate). When the flame-retardant layer was formed on the EPS surface, it showed an improvement of 93.5% at the THR compared to neat EPS, which satisfied the flame retardancy of the quasi-uncombustible grade.