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# Criteria for Hydrogel Fillings in Fire-resistant Glass Window Panes

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## Abstract

Fire-resistant glass consists of a window pane composite with hydrogel fillings. These hydrogel fillings have high requirements in terms of transparency, mechanical properties and aging resistance. But the manufacturing process of a window pane laminate with hydrogel fillings is also demanding, since nowadays a cast-in-place process is preferred. In addition, there is the actual function of these hydrogels: intumescence in case of fire and a heat-blocking effect. In the event of a fire, temperatures of over 800 °C are already generated after a short time (t100min) can even produce temperatures of over 1000 °C. The large number of demanding criteria dramatically reduces the substances that can be considered for this application. The hydrogels used today are mostly polymer (mainly acrylamide and acrylic acid) and water glass based. Both substances have limited temperature resistance and insulating properties. This presentation will describe some of the criteria in more detail and discuss the requirements for new more temperature resistant materials.

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