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Catalytic Diesel Soot Oxidation by Hydrothermally Stable Glass Catalysts

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Keywords: soot oxidation, potassium catalyst, glass catalyst, cordierite filter, diesel particulate filter**Abstract:**

K-Ca-Si glass catalyst coated cordierite was exposed to extended continuous soot oxidation testing in a bench top reactor utilizing flame soot deposition. These samples maintained a T_{50} temperature of 500°C at the end of an estimated 100,000 mi equivalent continuous soot oxidation testing in a low humidity environment. High temperature (500-700°C) hydrothermal exposure led to potassium and calcium carbonate formation on the glass catalyst surface which degraded oxidation activity with increasing hydrothermal temperature up to 700°C due to reduced potassium surface mobility. The presence of a soot layer during hydrothermal exposure shielded the glass surface from extensive deactivation, suggesting glasses as promising catalysts for extended DPF use.

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