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Oxygen inhibition in the decomposition of NO on metal oxides and platinum

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Abstract

The decomposition of NO has been studied in a flow reactor on oxides of iron, cobalt, nickel, copper, and zirconium as well as on supported platinum at 780–960 Torr between 450 and 1000 °C. The inlet gas contained from 1.5 to 15% NO and from 0 to 5% O₂. The exit gas was analyzed for NO, N₂, O₂, and N₂O. Above 450 °C, N₂ and O₂ were the only products. For all catalysts, the reaction was first order with respect to NO, and O₂ had a strong inhibiting effect. From the kinetics, it appears that oxygen inhibition is due to equilibrated chemisorption of oxygen on sites required for the rate-determining process of NO chemisorption.

There are no figures or tables for this document.

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