

DETAILED AND GLOBAL KINETIC MECHANISMS FOR SURROGATE FUEL

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Abstract: Detailed and global reaction mechanisms of oxidation and combustion of surrogate of aviation kerosene fuel JP-8 have been developed and validated. Surrogate fuel consists of normal alkane hydrocarbons from C_8H_{18} to $C_{16}H_{34}$, because gas chromatography spectrometry analysis of JP-8 fuel has demonstrated pronounced peaks for the C_8 – C_{16} normal hydrocarbons. The detailed kinetic mechanism comprises 162 chemical species and 2380 reversible reactions, and global mechanism comprises 14 chemical species and 13 reactions. Satisfactory agreement between predicted and measured data on ignition delays and flame propagation velocities was obtained for both mechanisms.

Keywords: combustion; surrogate fuels; aviation kerosene JP-8; detailed kinetic mechanisms; global kinetic mechanisms

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