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EFFECT OF FAME ON DIESEL FUEL COLD FLOW PROPERTIES

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The introduction of FAME both as a B100 fuel and as diesel fuel component has resulted in a number of fuel quality concerns due to the high ester-wax content and the presence of chemical impurities in FAME that were previously unknown in fossil fuels. These new chemical species can affect familiar fuel properties such as filterability, cold flow performance and operability.

New additives have been developed to deal with these issues. The treat rate of cold flow improver additives can be an order of magnitude higher for FAME (B100) than for a corresponding fossil diesel to achieve a similar CFPP depression. In addition, additives which are required to improve the handling, filterability and storage characteristics of the B100 often end up in BX blends. It is therefore imperative to understand their effect on cold vehicle operability and whether there are any harms associated with their use.

This paper presents new data from an investigation of the effect of B100 both with and without additives on the cold flow performance of BX. Performance has been evaluated using CCCD (cold chamber chassis dynamometer) on a variety of vehicles with critical cold weather performance. The no-harms profile of high treat rates of a typical biodiesel flow improver (BDFI) have also been demonstrated in engine and passenger car field trials.