

Compatibility of 30% Diester with CRT[®]

Eminox and Johnson Matthey Common Position Statement

An investigation has been performed into the compatibility of 30% Diester (a biodiesel blend comprising of Diester rapeseed methyl ester [RME] mixed with 50ppm sulphur mineral diesel, conforming to the EN590 standard, in a ratio of 30:70 by volume) with the operation of the CRT[®]. The investigation consisted of analysing data from vehicles (buses) fitted with CRT[®] operating in service across France.

The composition of 30% Diester fuel and oil samples was verified and Diester-aged catalysts underwent post mortem and activity testing. It was concluded that the fuel and oil samples gave no concern regarding the successful operation of the CRT[®] and the catalysts were in good condition and although showing signs of aging, there were no signs of any unusual aging compared to catalysts run on standard EN590 mineral diesel fuel.

It is foreseen that the use of 30% Diester should present no problems to the operation of the CRT[®], provided that the following criteria are followed:

- The engine / vehicle manufacturer must approve the use of the biodiesel at that specific blend ratio (i.e. RME:mineral diesel ratio of 30:70) in that specific engine.
- The neat biodiesel feedstock used by the fuel supplier is to conform to the European EN14214 standard and only be blended, in mixtures of up to 30% by volume, with mineral diesel fuels complying with the European EN590 diesel fuel standard. The final product 30% Diester must also generally comply with the EN590 standard¹.
- The biodiesel blend B30 must contain less than 50ppm sulphur and less than or equal to 1ppm phosphorous.
- The B30 biodiesel must be stored and used within the fuel supplier's recommended guidelines (N.B. Biodiesel has approximately six months storage capability from the time of retail sale, depending on storage conditions).
- The vehicle application must be approved by Eminox for use with CRT[®], e.g. with regard to suitable duty cycles, exhaust temperatures and oil consumption, etc. (It has not been scientifically proven by this investigation, but biodiesel may produce lower combustion temperatures in comparison to standard EN590 mineral diesel and / or may produce less NO_x - This must be considered on proposing an application.)
- The Eminox CRT operating guidelines should be followed, including those related to vehicle maintenance.
- It is advised that the engine-out smoke opacity levels and the CRT[®] system back-pressure levels are monitored at least monthly for any changes during the first year of operation with the biodiesel, to verify that the application is suitable.

In principle, it is foreseen that running vehicles equipped with CRT[®] with other 30% biodiesel blends, from manufacturers other than Diester, should not present any problems. However, all available biodiesel products are not globally approved for use by this statement. If an operator wishes to use a biodiesel product other than Diester, then in order to minimise the risk of CRT[®] failure, the biodiesel fuel and the vehicle application must conform to the above and the following criteria:

- Neat biodiesel is not to be blended by operators or consumers. The biodiesel must only be sourced in a maximum B30 blend composition from fuel suppliers manufacturing and supplying neat biodiesel certified to EN14214.
- The biodiesel feedstock is to be manufactured from rapeseed methyl ester (RME), conform to the European EN14214 standard and only be blended, in mixtures of up to 30% by volume, with mineral diesel fuels to complying with the European EN590 diesel fuel standard. The final product B30 must generally conform to the EN590 standard¹.
- As use of biodiesel has been implicated in engine component malfunctions in the past and any change in the vehicle's emissions, such as increase in particulate levels, can damage the particulate filter, it is important that the engine is compatible and has been approved for use with the relevant biodiesel blend.

Non-compliance with the above guidelines could result in serious degradation of the vehicle's engine components and / or exhaust after-treatment system.

¹ Accepting that EN590:2004 states that the fuel must have 'a maximum amount of 5% FAME'.

The views contained in this Common Position Statement are those of Eminox Ltd and Johnson Matthey Plc.