Warranty claims in respect of attainable performance, dynamic characteristics, start capability, emission characteristics, extent of maintenance and attainable life are linked to the use of standardized diesel fuels of good quality.

In the event that Mercedes-Benz engines are operated with other fuels, this will likely result in disadvantages for the operator.

The disadvantages which may occur with aviation turbine fuels of quality grades Jet A/A1 and JP 8, JP 5, F 34, F 35, F 44, F 63 (for properties and specifications see table of aviation turbine fuels), are familiar to us from test bench trials and practical experience based on series 300 and 400 engines (CVs) and on the prechamber engines with inline pump for cars; it is not yet possible to fully evaluate more recent engines (series 500 and 900, car engines with distributor pump, with Common Rail Direct Injection) in all aspects.

The following statements therefore essentially apply to engines of older technology (series 300 and 400 (CVs) and to prechamber engines with inline pump for cars). Similar statements apply to the new fuel F 63, which is formulated F 35 by the addition of wear protection and ignition promotion additives; we cannot at present provide a conclusive opinion of the extent to which these additives provide the desired effect.

A major drawback of such fuels for diesel engines is in their non-defined ignition performance (cetane number), which may also assume cetane numbers of less than 40. This, in turn, can result in poor starting characteristics, combined with the development of white exhaust, as well as to a deterioration in emission levels. In this connection, we urgently recommend using additional start aids (flame starting systems or special heating flanges) to improve the cold starting property.

The low boiling range can involve a reduction in the life of the fuel injection system as a consequence of cavitation at nozzles and injection lines; in addition, the reduced lubricity (excessive HFRR value) may result in increased wear in injection equipment.

In view of the lower density, a lower engine performance (approx. 5 %) is likely if the fuel injection pump setting is maintained.

The fuel filter used must be a filter element which is approved for use with aviation turbine fuel; this is normally the case for car engines and for CV engines of series 500 and 900.

Filter elements with part no. 000 092 38 05 should be used for CV engines of series 300; the filter housings can continue to be used. Suitable filter elements for series 400 engines are available on request from the suppliers who cooperate with MB (Hengst, Knecht).

Aviation turbine fuels of grade Jet B, JP 4, F 40 have not been tested by MB and are not recommended by virtue of the as yet lower boiling characteristic and lower density.

i Aviation turbine fuels are used both in the military as well as in the civilian sector. The table listed below contains the qualities which are used most frequently, together with the corresponding designations and principal requirements.

i Table: The specifications in the same line, describe approximately identical fuels. They typically differ in respect of three main characteristics: density, boiling range and freezing point. We recommend consulting the comprehensive original standards (ASTM D 1655 or MIL-T-5624 and MIL-T-83133) for more detailed information.

Aviation turbine fuels

Civilian	**Density** kg/m3	**Freezing point** °C	**Military**	**Density** kg/m3	**Freezing point** °C	**Boiling point** requirements, see original standards °C approx.
Jet A	775-840	max. -40	JP 5, F 44	788-845	max. -47	175-300
Jet A1 without anti-icing inhibitors	775-840	max. -47	JP 8, F 34, F 63 (= F 35 with additives) F 35 (= F 34 without anti-icing inhibitors)	775-840	max. -47	130-300
Jet B	751-802	max. -50	JP 4, F 40	751-802	max. -58	50-240

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