

**JAMA Position on the Use of Diesel Fuel Blended
with FAME Concentrations in Excess of 5%**

Fuel & Lubricants Subcommittee

Japan Automobile Manufacturers Association, Inc. (JAMA)

Introduction

JAMA has been asked our opinion about use of diesel fuel blended with high FAME concentration by automobile associations/stakeholders of countries that use of FAME blends is expanding. At the same time, JAMA has started research activities and various testing were conducted by JARI (Japan Automobile Research Institute) for several years. As results of them, we have accumulated a lot of technical data by using diesel fuel blended with high FAME concentration. Based on the technical evidences obtained from the particular activities, hereby, JAMA is introducing the supplemental statement on the use of diesel fuel blended with FAME concentration in excess of 5%.

Background

JAMA endorses the use of fatty acid methyl esters (FAME) in diesel fuel, because they contribute to reduced carbon dioxide (CO₂) emissions from motor vehicles and thereby help counteract global warming. However, owing to the specific property of FAME blendstocks, JAMA has been recommending that FAME concentrations in diesel fuel not exceed 5% in order not to jeopardize safe vehicle operation [see *JAMA position statement update (May 2015)*].

Meanwhile, the use of diesel fuel blended with high FAME concentrations has been expanding in various Southeast Asian countries, based on the specific circumstances and policies of the individual countries concerned. In some countries, FAME concentrations in diesel fuel are as high as 10% or 20%. This is a matter of serious concern to JAMA and its member manufacturers and has prompted us to examine how diesel fuel containing such high FAME concentrations can be safely used in the market.

The purpose of this position statement—which does not replace or render invalid JAMA's May 2015 position statement on the use of diesel fuel blended with a maximum of 5% FAME but is a supplement to that statement—is, therefore, to indicate the specific conditions and requirements as shown as below that must be met in order for diesel fuel containing high FAME concentrations to be used safely, without posing risks to motor vehicles and their operators.

Conditions & Requirements for High-Ratio FAME-Blended Diesel Fuel Use

Conditions of Use

- Climatic conditions:
Warm or hot climates
- Feedstock:
PME (palm methyl ester) only
- Maximum FAME concentration:
Must not exceed 20%
- Exhaust emission standards compliance level applicability:
Vehicles complying with up to Euro 4/IV standards of R83/R49 in the UN regulations.

Requirements for Use

- Oxidation stability:
B100 blendstock: 10 hours minimum by Rancimat
BXX blendstock: 35 hours minimum by Rancimat
(or 65 minutes minimum by PetroOXY, or 0.12 mg KOH/g by Delta TAN)
These requirements are based on Bxx not containing cetane booster.
- Monoglyceride content for B100 blendstock:
Limit value must be specified in the national B100 standard, based on real-world verification testing conducted in the coolest geographical area (i.e., the residential area with the lowest low temperatures, e.g., Northern Thailand, high altitude area such as Bandon, Bukittinggi in Indonesia, Cameron highlands in Malaysia) of the country concerned.
- Water content for BXX:
200 ppm maximum
- Public notification:
Government/relevant stakeholders must notify the public of the problems that may arise—for example, clogged filters (“it may shorten the fuel filter maintenance interval.”)—for vehicle operators using diesel fuel containing high FAME concentrations.

Summary

- JAMA confirms the acceptability of the use of diesel fuel containing FAME concentrations not exceeding 20% (B20) when the conditions and requirements stipulated above are met. Meeting those conditions and requirements is necessary in order not to jeopardize safe vehicle operation and in order to avoid potential problems for vehicle operators.

- Because vehicles currently in use include large numbers of old vehicles, many of which were not designed to accommodate the use of diesel fuel containing high FAME concentrations, JAMA requests that relevant stakeholders continue supplying the market with conventional diesel fuel blended with a maximum of 5% FAME (B5).

For newer vehicles equipped with advanced fuel systems and aftertreatment systems that enable compliance with stringent emissions standards such as Euro 5/V, verification of compatibility with the use of high-ratio FAME-blended diesel fuel is necessary, because non compatibility would be possible.
