1. Origins of sulfur

Mercedes-Benz diesel engines are designed for diesel fuel, which complies with respective national and international requirements (DIN EN 590 in Europe).
These requirement standards usually contain a limit for the maximum permissible sulfur content, they do not say anything about any minimum sulfur content required. Neither is this necessary because sulfur does not have any function in the diesel fuel; its presence is down to crude oil, which naturally exhibits a different specific sulfur content. The level of sulfur content in the diesel fuel depends on the origin of the crude oil, desulfurization facilities at the refineries and is limited by standards and/or laws.

2. Sulfur content regulation

2.1 In the EU

In the Federal Republic of Germany, changes to the mineral oil tax regulations for low-sulfur fuel (max. 50 ppm) that came into effect on November 1, 2001, made low-sulfur fuel the fuel of choice; for the same reason, only sulfur-free gasoline fuels with max. 10 ppm sulfur has been available on the German market since January 1, 2003.
In other EU states comparable regulations have likewise led to a lowering of the sulfur content in the fuel.

2.2 In other countries

In many countries even today values around 0.3% by weight are usual, in some countries as always there are sulfur values around 1.0% by weight and above. In the USA max. 0.05% by weight applies across the country.

For this reason there are no technical objections to operating an engine on diesel fuel with a low s ul
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3. Effect of sulfur

3.1 "Conventional" emission-control technology

By this we refer to either no exhaust-gas after treatment at all or an emission control by means of an oxidation catalytic converter.
The service life of the engine is impaired with a sulfur content > 0.3% by weight in the diesel fuel. Sulfur dioxide is given off during the combustion process which together
Clear advantages in emission levels are achieved with fuels that have not only had significant reductions in their sulfur content, but also where other relevant diesel fuel properties such as aromatic compounds/poly aromatic content and density are reduced and ignition quality of the fuel improved.
Wit
h a sulfur content < 0.005 (50 ppm) or even < 0.001% by weight (10 ppm) diesel fuels generally have favorable properties due to their manufacture also in the criteria mentioned.

3.2 "Advanced" emission-control technology

These are understood to include, for example, NOx storage catalytic converters based on earth alkali/rare metal or the "CPF-System" for particulate reduction.
For trouble-free operation these systems require sulfur-free diesel fuel (< 10 ppm). In both cases the sulfur trioxide formed from the fuel sulfur interferes with the catalytic conversion of pollutants, in addition the NOx storage catalytic converter being irreversibly blocked by the formation of earth alkali sulfates.

Conclusion: Where possible Mercedes-Benz vehicles should be operated with sulfur-free diesel fuel.

4. Supporting measures

In general it should be noted that low-sulfur or sulfur-free diesel fuels meet the requirements of **EN 590**.

In the case of diesel fuels with very low sulfur content, particular importance is to be attached to the question of **lubricity** (see section on "Lubricity" Sheet 131.0); without an appropriate treatment with additives with lubrication-improving additives,
wear in the
inj
ection system, particularly the pump is to be reckoned with.