

Fuels and Additives

Job No.

0-5

The diesel fuels should at least meet the following quality requirements according to DIN 51 601 or the specifications Diesel Fuel Oil No. 1-D and 2-D (America) or B.S. 2869/1957 Class A (England).

Quality Specifications for Diesel Fuel according to German Standard DIN 51 601

Properties	DIN 51 601	Unit	Testing method	
			DIN	ASTM
Density at 15° C	0.820 to 0.860	g/ml	51757	D-941
Boiling range up to 360° C	min. 90	% vol.	51752	D-158
Viscosity at 20° C	1.8 to 10	cSt	51550	—
Flashpoint (Abel-Pensky)	min. 55	° C	51758	D-93
Filterability (Hagemann-Hammerich)				
Summer	min. 0	° C	51770	D-97*
Winter	min. -12	° C		
Sulphur content	max. 1.0	% wt.	51768	approx. D-90
Conradson test	max. 0.1	% wt.	51551	D-189
Influence on zinc (loss in weight)	max. 4	mg	51779	—
Ignition quality	min. 40	cetane No.	51773	D-613
Water content	max. 0.1	% vol.	51777	—
Ash content	max. 0.02	% wt.	53657	D-482

* approx. cloud-point

The vanadium content should not exceed 0.0001 % wt.

Tractor fuels and motor kerosene are of limited use, if they comply with the minimum specifications according to DIN 51 602 and/or DIN 51 636. Pure distillates of shale oil can also be used.

Castor oil, soy bean oil and other vegetable oils, e.g. available in the tropics, can be used in exceptional cases as mixing components. These fuels should only be exploited in extreme cases, because a decrease of engine output cannot be eliminated under such operating conditions.

We urgently caution against the use of "wild" fuel mixtures, because they often contain acids which cause resinous deposits and corrosion. Qualities such as fuel oil, bunker oil etc. should not be used, because they contain among other components evident quantities of vanadium and therefore, the corresponding corrosion has to be taken into consideration.

The following points have to be considered if the fuel is obtained from barrels:

1. An approved commercial filling strainer, a chamois leather, or if nothing else is available a clean flannel cloth should be placed over the tank filler hole.
2. Take the fuel from directly below the liquid level, that is, take some care when placing the suction pump into the barrel. A minimum distance of 15 cm should be maintained between suction pipe end and bottom of barrel, so that the deposits (dirt, mud, water) are not pumped into the tank.

3. The suction port at the end of the suction pipe must be protected by a strainer with fine meshes.
4. Store suction pump dust-proof. Do not place it on the floor.

Fuel mixtures for extremely cold weather see Job No. 0-7 "Measures for winter operation".

Special Additives for Fuels

A distinction has to be made between the additives, which are added by the fuel producer to obtain desired individual properties or an improvement of same, and the so-called special additives, which should be added to the commercial products by the final consumer.

We have no reason to recommend and specify special additives if commercial automotive gas oil is used. Of course, there are special additives which under certain operating conditions check or even eliminate the formation of deposits at the injection components as well as the valve parts. The special additives for automotive gas oil tested and released by us can be used, but must not be used.

In contrast to the vehicle and assembly engines, which are normally operated with commercial gas oil, the use of a special additive can be justified for marine engines, because fuels of very different quality can often be employed here. Special additives admixed by the final consumer can often compensate for extreme fuel qualities.

We have tested a number of commercial fuel additives; more details can be requested from our plants, branches, and agencies. By using these additives no disadvantages are to be expected.