

THE STATE STANDARD OF THE USSR

DIESEL FUEL

SPECIFICATIONS

GOST 305-82

Official publication

The State Committee of the USSR on Standards

Moscow

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The State Standard of the BSSR

DIESEL FUEL Specifications OKP 02 5131 0000	GOST 305-82* In lieu of GOST 305-73 and GOST 4749-73
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By the Resolution of the State Committee of the USSR on Standards, of March 31, 1982, No. 1386, the time of validity shall be fixed from January 01, 1983 till January 01, 1988.

Non-observance of the Standard shall be persecuted by the Law

The present Standard covers the fuel for high-speed diesel and gas-turbine engines to be mounted on the ground and sea vehicles, obtained from the petroleum products.

It is allowed to produce the fuel with additives permitted for use in accordance with the established procedure.

1. GRADES

1.1. Depending on the conditions of use, three grades of the diesel-fuels shall be established:

L (summer) - for operation at the ambient temperatures of 0 degr. C and above;

Z (winter) - for operation at the ambient temperatures of minus 20 degree. C and above (the solidification point of the fuel shall be no more than minus 35 degr. C) and minus 30 degr. C and above (the solidification point of the fuel shall be no more than minus 45 degr. C);

A (arctic) - for operation at the ambient temperatures of minus 50 degr. C and above.

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Reprinting is

*Second edition (August 1983) with Amendment 1 approved in April 1983 (IUS 7-83)

1.2. Based on the content of sulfur, the diesel fuels are classified in two kinds:

I - the mass portion of sulfur does not exceed .2 %.

II - the mass portion of sulfur does not exceed .5 % (for Grade A - no more than .4 %).

1.3. The OKP codes of the diesel fuel are shown in Table 1.

Table 1

Fuel	The OKP code
L - 0.2	02 5131 0103
L - 0.5	02 5131 0102
Z - 0.2	02 5132 0102
Z - 0.5	02 5132 0101
A - 0.2	02 5134 0107
A - 0.4	02 5134 0101

1.4. The designation of the fuel Grade L shall include the mass fraction of sulfur and the flash point, the fuel Grade Z - the mass fraction of sulfur and the solidification point, the fuel Grade A - the mass fraction of sulfur.

Examples of the designation

The summer fuel with the fraction of sulfur of up to .2 % and the flash point of 40 degree C:

The diesel fuel L-0.2-40 GOST 305-82

The winter fuel with the mass fraction of sulfur of up to .2 % and the solidification point of minus 35 degree C:

The diesel fuel Z-0.2 minus 35 GOST 305-82

The arctic fuel with the mass fraction of sulfur of .4 %:

The diesel fuel A-0.4 GOST 305-82

2. Technical requirements

- 2.1. The diesel fuel should be produced in accordance with the requirements of the present Standard, by the technology approved in compliance with established procedure.
- 2.2. As to the physicochemical factors, the fuel should meet the requirements and the norms indicated in Table 2.

Table 2

Factor	Norm for the Grade			Test method
	L	Z	A	
1. Cetane rating, at least	45	45	45	By GOST 3122-67
3. Fraction contents: 50 % is distilled at the temperature of, C degrees, not higher 96 % is distilled at the temperature of (end of distillation), C degrees, not higher	280 360	280 340	255 330	By GOST 2177-82
4. Kinematic viscosity at 20 degree C, sq. mm/s. (cCt)	3.0-6.0	1.8-5.0	1.6-4.0	By GOST 33-82
5. Solidification point, degree C, not higher, for the climatic zone: - moderate - cold	- 10 -	-35 -45	- -55	By GOST 20287-74 with amendment in p. 5.2 of this Standard
6. Cloud point, degr. C, not higher, for the climatic zone: - moderate - cold	-5 -	-25 -35	- -	By GOST 6356-75

7. Flash point determined in a sealed crucible furnace, degr. C, not lower:				By GOST 6356-75
- for railroad and ship heat diesel engines and gas turbines	61	40	35	
- for the general purpose diesel engines	40	35	30	
7. Mass fraction of sulfur, %, not more:				By GOST 19121-73
- in the fuel type I	.2	.2	.2	
- in the fuel type II	.5	.5	.4	
8. Mass fraction of mercaptan sulfur, %, not more	.01	.01	.01	GOST 17323-71
9. Hydrogen sulfide percentage	0	0	0	GOST 17323-71
10. Copper plate test	+	+	+	GOST 6321-69
11. Contents of water-soluble acids and alkalis	0	0	0	GOST 6307-75
12. Formation of actual resins, mg/100 sq. cm of fuel, not more	40	30	30	By GOST 8489-58
13. Acidity, mg KOH per 100 sq. cm of fuel, not more	5	5	5	By GOST 5985-79
14. Iodine number, g per 100 of fuel, not more	6	6	6	By GOST 2070-82
15. Ash content, %, not more	.01	.01	.01	By GOST 1461-75
16. Coking capacity of 10-% residuc, %, not more	.30	.30	.30	GOST 19932-74
17. Filterability factor, not more	3	3	3	GOST 19006-73
18. Foreign bodies content	0	0	0	GOST 6370-83
19. Water content	0	0	0	GOST 2477-65
20. Density at 20 degr. C. kg/cub. M, not more	800	840	830	GOST 3900-47

Notes:

- It is allowed to produce and supply, as agreed with the user, the fuel Grade A and Grade Z (with the solidification point of 45 degr. C) with the cetane rating of no less than 40.
- It is allowed to produce, by the customer's request, the fuel Grade Z, cetane rating of at least 45, with the solidification point of no higher than minus 40 degr. C.
- As a matter of agreement with the user, the cloud point of no higher than minus 11 degr. C at the solidification point of no higher than minus 35 degr. C is permitted for the diesel fuel Grade Z obtained from the summer fuel by application of the carbamide deparaffination.
- As agreed with the consumer, it is allowed to produce the fuel Grade Z (from the summer fuel) with the solidification point of minus 35 degr. C, using a depressing agent, the other factors, therewith, should satisfy the requirements for the fuel Grade L. The fuel containing an additive shall be allowed for use at the ambient temperature of no less than minus 15 degr. C.
- For the diesel fuels of all Grades produced from the Baku oils, the ash content is allowed not higher than .02 % (except for the fuels designed for gas turbines), and the actual resin concentration is allowed not higher than 60 mg per 100 sq. cm of fuel.
- Allowed is an increase in acidity for 1 mg of KOH and in the actual resin concentration for 10 mg per 100 sq. cm of fuel for the diesel fuel of all Grades after five years of storage.
- The diesel fuel Grades L, Z and A which have been assigned the State Quality Mark should be produced as such having the following indices:

- Mass fraction of sulfur, %, within2
- Actual resin concentration, mg per 100 sq. cm of fuel, within	25
- Iodine number, g of iodine per 100 g of fuel, within	5
- Ash content, %, within008
- Coking capacity of 10-% residue, %, within20
- Filterability factor, not more than	2
- As agreed with the consumer, it is allowed, from April 1 till September 1, and in the southern zones - from March 1 till November 1, to produce and to use the fuel Grade L with the solidification point not higher than 0 degr. C (without determination of the cloud point) and the water content of no more than

"traces" (for the State-quality-mark-assigned fuel - "absence") at a minimum ambient temperature (at the place of the fuel use) of not lower than 5 degr. C.

9. For the diesel fuels produced from the Sakhalin, Troitsk-Anastasyevsk, as well as the mixture of the Troitsk-Anastasyevsk and Kazakhstan oils, the density level shall be fixed for the Grade L - not more than 875 kg/cub. M, for the Grades Z and A - not more than 860 kg/cub. M
10. Notes 1-6 do not cover the diesel fuel of all Grades produced with the State Quality Mark, as well as the exported fuels.
When exporting the fuel, in addition to the factors shown in Table 2, determined and indicated in the shipping documents shall be color by GOST 2667-82 and the limit filterability factor by GOST 22254-76.
(Revised wording, Amendment 1)

8. SAFETY PRECAUTIONS

3.1. The diesel fuel is a combustible liquid. The dangerously explosive concentration of its vapors mixed with air makes up 2-3 % (in volume). The temperature of spontaneous combustibility of the fuel Grade L is 300 degr. C, that of Grade Z - 310 degr. C, and Grade A - 330 degr. C; the limits of the flash points for the Grades are the following:

- Grade L: the lower limit - 69 degr. C, the upper limit - 119 degr. C;
- Grade Z: the lower limit - 62 degr. C, the upper limit - 105 degr. C;
- Grade A: the lower limit - 57 degr. C, the upper limit - 100 degr. C.

The flash point for the Grades: L - above 40 degr. C, Z - above 30 degr. C, A - above 30 degr. C (the fuels for the general purpose diesel engines); and L - above 61 degr. C, Z - above 40 degr. C, and A - above 35 degr. C (the fuels for the railroad and ship diesel engines and gas turbines). The maximum permissible concentration of the fuel vapor in the air of the work zone is 300 mg/cub. m. The diesel fuel is a low-toxic substance of the Class 4 danger.

This fuel irritates the mucous membrane and skin of man.

- 3.2. In order to prevent getting the fuel vapor into the atmosphere of the work premises, the equipment, dumping and filling apparatus should be sealed.
- 3.3. In the places for storage and handling of diesel fuels, it is prohibited to deal with open fire; the artificial illumination should be of a blast-resistant version.
- 3.4. When dealing with the fuel, it is not allowed to use the tools that can produce spark on impact. In the event that the fuel has caught fire, the following means can be used to suppress fire: sprayed water, foam, and for the volume extinguishing - carbon dioxide, SZhB composition, composition 3.5 and overheated steam.
- 3.5. Should the fuel be spilt, it is necessary to collect it in a separate vessel, to wipe out the place of spill with a dry cloth, and in case of spilling in the open site - the place of spill should be covered with sand with the subsequent removal thereof.
- 3.6. When sampling, making analyses and handling the fuel in the course of shipping and production operations, one should make use of the individual protective means in compliance with the standards approved by the State Committee of the USSR on labor and social matters and the Presidium of the VTsSPS.
- 3.7. The vessels in which the fuel is stored and transported, as well as the pipelines should be protected against static electricity.

4. RULES FOR ACCEPTANCE

- 4.1. The diesel fuel shall be accepted in lots. The lot is any amount of fuel of uniform quality factors which is provided with one quality certificate.
- 4.2. The volume of selection - in conformity with GOST 2517-80.
- 4.3. Should there be obtained negative results of testing on at least one of the factors, a repeated test on this factor shall be performed on the new sample from a duplicate selection.
The results of the repeated test shall be spread to the whole lot.

5. TEST METHODS

5.1. Sampling of the diesel fuel shall be carried out according to GOST 2517-80. The mass of the combined sample shall make up 2 cub. dm of fuel.

5.2. The solidification point of the diesel fuel shall be determined according to GOST 20287-74 without preliminary or subsequent heating of the fuel up to 50 degr. C.

6. PACKING, MARKING, STORAGE AND SHIPMENT

6.1. The packing, marking, storage and shipment of the diesel fuel shall be performed in accordance with GOST 1510-76.

The quality certificate on the diesel fuel Grade L, Z and A which have been assigned the State Quality Mark shall carry an impression of the State Quality Mark as per GOST 1.9-67.

7. MANUFACTURE'S GUARANTEES

7.1. The manufacture guarantees the correspondence of the diesel fuel to the requirements of the present Standard provided that the conditions of shipment and storage are satisfied.

7.2. The guaranteed storage time is 5 years after the day of production.