

LIGHT DIESEL OIL (LDO)

Ldo is a blend of distillate fuel with a small proportion of residual oil, primarily recommended for slow speed (below 750 RPM) diesel engines used in agriculture pump sets.

It is also used as a fuel in furnaces and boilers where low sulphur residual fuel is required.

Other uses of LDO is in slow speed marine and industrial DG sets.

LDO CONFORMS TO IS 1460:2000 AND AMENDMENT NO.1, JANUARY 2003 SPECIFICATIONS FOR LDO.

Sr.	Characteristics	Requirements			Test Method
		HSD	LDO	[P:] of IS: 1448	
i)	Acidity, inorganic	Nil	Nil		P: 2
ii)	Acidity, Total, mg KOH/g, max.	0.20	-	-	P: 2
iii)	Ash, percent by mass, max.	0.01	0.02	-	P: 4
iv)	Carbon residue (Rams bottom), on 10% residue, % by mass, max.	0.30 ¹	1.50 (On whole sample)	-	P: 8
v)	Cetane Number, min OR Cetane index ³ , min	48 ²	-	-	P: 9
		46 ²	-	-	[P: *]
vi)	Pour Point ⁴ , max.				P: 10
	1. Winter	3°C	12°C	-	
	2. Summer	15°C	21°C	-	
vii)	Copper strip Corrosion for 3 hrs. at 100 °c.	Not worse than No.1	Not worse than No.2	-	P: 15
viii)	Distillation, percent v/v, recovered				P: 18
	At 350 °c, min	85	-	-	
	At 370 °c min	95	-	-	
ix)	Flash Point				
	1. Abel °c, min.	35	-	-	P: 20
	2. Pensky Martin (PMCC) °c, min.	66 ⁵	66	-	P: 21
x)	Kinematic Viscosity, cst at 40 °c	2.0 to 5.0	2.5 to 15.7	-	P: 25
xi)	Sediment, % by mass, max.	0.05	0.10	-	P: 30
xii)	Density at 15 °c, Kg/m ³	820-860 ⁶	To be reported	-	P:16 ⁷
xiii)	Total Sulphur, %mass, max.	1. 0.25 ⁸	1.8	-	ASTM D 4294 ¹⁰
		2. 0.05 ⁹			

xiv)	Water content, %v., max.	0.05	0.25	-	P: 40
xv)	Cold Filter Plugging Point (CFPP) ⁴ °c, max.			-	P: 110
	a) Winter	6°c		-	
	b) Summer	18°c		-	
xvi)	Total sediments ¹¹ Mg/100 ml, max.	1.6	-	Test for determination of total sediments. (Adopted from UOP Method 413- 82) given in Annex A of the standard.	-

Note:

1. This limit is applicable prior to addition of cetane number improvers, if used. In case a value exceeding the limit is obtained on finished fuels in the market, ASTM D 4046 shall be used to establish the presence of nitrate containing cetane number improvers. In such case, the present limit for carbon residue cannot be applied. However, the use of cetane number improver does not exempt the manufacturer from meeting this requirement prior to the addition of additives.
2. For HSD processed from Assam crude, either the cetane number 45, min. or cetane index 43, min shall be applicable.
3. It may be noted that this method is not applicable to pure hydrocarbons or fuels containing cetane improvers or fuel derived from coal.
4. Winter shall be the period from November to February (both months inclusive) and rest of the months of the year shall be called as summer. The values for maximum pour point and CFPP shall be those as directed by OCC from time to time.
5. Applicable for Naval applications only for high flash HSD including Merchant Navy and fishing vessels of 12 m in length.
6. For HSD processed from Assam crude, the value 820-870 shall apply.
7. In case of dispute with regard to the test to be followed, [P: 32] shall be the referee test method
8. Total sulphur content for HSD supplied to Indian Navy for defence use shall be 0.20 percent by mass, max.
9. The requirement of sulphur content 0.05 percent by mass, max is applicable for notified areas. Such fuels shall be tested for the requirement of lubricity using the high frequency reciprocating rig (HFRR) test stipulated in ISO 12156-1:1997 'Diesel fuel Assessment of lubricity using the high-frequency reciprocating rig (HFRR)- part 1: test method'. Lubricity test requirement of corrected wear scar diameter (wsd 1.4) at 60 °c shall be 460 microns, max.
10. The test method given in IP 336 may be permitted for testing of total sulphur as an alternative method. However, in case of dispute, method given in ASTM D 4294 shall be the referee method.
11. This test shall be carried out only at the refinery or manufacturer's end. As an alternative, the test method ASTM D 2274 may be used and in such case the value of total insoluble shall be 1.5 mg/100 ml max. In case of dispute with regard to the test to be followed, ASTM D 2274 shall be the referee test method.

* Under Preparation till such time ASTM D 4737 Shall be followed.