

METRIC

MIL-L-21260D
AMENDMENT 2
11 October 1990
SUPERSEDING
AMENDMENT 1
23 May 1989

MILITARY SPECIFICATION

LUBRICATING OIL, INTERNAL COMBUSTION ENGINE, PRESERVATIVE AND BREAK-IN

This amendment forms a part of MIL-L-21260D, dated 29 April 1988, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 3

2.2, under AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM), D 2896, delete the word "Total" from the title and add:

- "D 4624 - Measuring Apparent Viscosity by Capillary Viscometer at High Temperature and High-Shear Rates.
- "D 4683 - Measuring Viscosity at High Temperature and High Shear Rate by Tapered Bearing Simulator.
- "D 4741 - Measuring Viscosity at High Temperature and High Shear Rate by Tapered-Plug Viscometer.
- "D 4927 - Elemental Analysis of Lubricant and Additive Components - Barium, Calcium, Phosphorus, Sulfur, and Zinc by Wavelength Spectroscopy."

Delete "DETROIT DIESEL ALLISON (DDA)" and substitute "ALLISON TRANSMISSION DIVISION (ATD)".41.5

AMSC N/A

FSC 9150

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MIL-L-21260D
AMENDMENT 2

PAGE 4

2.2, add the following at the end of the section:

"DEUTSCHES INSTITUT FUR NORMUNG (DIN)

DIN 51581 - Determination of evaporation loss of lubricating oils.

(Application for copies should be addressed to Deutsches Institut fur Normung e.V., Burggratenstr 4-10, D-1000 Berlin 30, Germany T 26011.)"

PAGE 8

Table II, before "Borderline pumping temperature, °C (max)" insert "High temperature/high shear Viscosity" and a "X" for all grades to indicate value shall be reported.

Under "Viscosity index, (min)", grade 40, delete the "X" and substitute "80".

After "Flash point, °C, min" insert "Evaporative loss" and a "X" in columns 10W and 15W/40 grades.

PAGE 9

3.4.5, after "Cam wear, μm , Average (max)" delete "196" and substitute "203" and after "Maximum" delete "441" and substitute "457".

PAGE 13

4.5.2, after line 16, add "High temperature/high shear" and "Evaporative loss".

MIL-L-21260D
AMENDMENT 2

PAGE 14

Table III, delete in its entirety and substitute the following:

TABLE III. Test methods.

Test	Test method		
	FED-STD-791	ASTM	SAE
Viscosity, kinematic		D 445	
Viscosity, apparent <u>1/</u>			J300
High temperature/high shear		D 4683, D 4624, D 4741	
Viscosity index		D 2270	
Pour point		D 97	
Stable pour point	203		
Borderline pumping		D 4684	
Flash point		D 92	
Evaporative loss <u>2/</u>		D 2887	
Gravity, API		D 287	
Carbon residue		D 524	
Color		D 1500	
Total acid number		D 664	
Base number		D 2896	
Phosphorus		D 1091, D 4047	
Chlorine		D 808 or D 1317 <u>3/</u>	
Sulfur <u>4/</u>		D 129, D 1552, D 2622, D 4294	
Nitrogen		D 3228	
Saponification number		D 94	
Sulfated residue		D 874	
Boiling range distribution		D 2887	
Metallic components	5601	D 4628 <u>5/</u> , D 4927	
Foaming		D 892	
Stability & compatibility	3470 <u>6/</u>		
Moisture-corrosion characteristics		Sequence IID <u>7/</u>	
Oxidation & wear characteristics		Sequence IIIE <u>7/</u>	
Low temperature deposits & wear		Sequence VE <u>7/</u>	
Bearing corrosion & shear stability		Labeco L-38 <u>8/</u>	
Ring-sticking, wear, & accumulations of deposits:			
Four-stroke cycle diesel engine <u>8/</u>		Caterpillar 1G2	
Two-stroke cycle diesel engine	355		
Friction retention characteristic & wear:			
Slip time & wear		Allison C-3 <u>9/</u>	
Stopping time & wear		D 4736	
Seal compatibility		Allison C-3 <u>10/</u>	
			51581

MIL-L-21260D
AMENDMENT 2

- 1/ Obtain the apparent viscosity using the method of test set forth by appendix A of SAE J300.
- 2/ The DIN 51581 is the preferred method.
- 3/ ASTM D 808 is the preferred method.
- 4/ ASTM D 1552 is the preferred method. ASTM D 4294 is only for use with base stocks.
- 5/ Other spectrochemical analysis methods as approved by the qualifying activity (see 6.4) may be used as alternates.
- 6/ See 4.6.1 for clarifying instructions.
- 7/ In accordance with ASTM STP 315H.
- 8/ In accordance with ASTM STP 509A.
- 9/ Use procedure described in item 9, Allison Transmission Division (ATD) C-3 specification.
- 10/ Use procedure described in item 6, Allison Transmission Division (ATD) C-3 specification.

Custodians:

Army - ME
Navy - Sh
Air Force - 68

Preparing activity:

Army - ME

Project 9150-1072

Review activities:

Army - AR, SM
Navy - AS, MC, SA, YD
Air Force - 11
DLA - GS

User activities:

Army - AT, MI
Navy - OS