



ADVANCED SYNTHETIC AVIATION TURBINE OIL

NATO CODE O-163 - MIL-PRF-7808 L GRADE 4

DESCRIPTION

Turbonycoil 400 is a lubricating oil with a viscosity of 4 cSt at 100°C. It is based on neopentyl polyol esters with high thermal stability, fortified with carefully selected anti-oxidant, anti-wear and anti-corrosion additives. Because of its specific formulation, Turbonycoil 400 has naturally a light dark colour.



APPLICATIONS

- Turbines of military and commercial aircrafts and helicopters, recommended in hot engines and when low fluidity at low temperature is needed
- Accessories (APU, starter, IDG, etc.)

Turbonycoil 400 has been used since 1999 by two Air Forces, as an alternative to MIL-PRF-7808 Gr. 3 on Lockheed Martin F-16 in Turkey, and as an alternative to MIL-PRF-23699 Class STD on Boeing F-18 in Canada (due to the cold climate in that country). The Canadian Air Force has reported a significant decrease in maintenance cost of the accessory gearbox drive using **Turbonycoil 400** compared to a competitor product.

Turbonycoil 400 is also used on Lockheed Martin F-22 Raptor and Lockheed Martin F-35A Lightning II.

CHARACTERISTIC	UNIT	TYPICAL RESULT	MIL-PRF-7808 GRADE 4 LIMIT	TEST METHOD
Density at 20°C	kg/dm ³	0.962	report	ASTM D4052
Kinematic viscosity at 100°C at 40°C	mm ² /s	4.01 17.8	min. 4.0 min. 17.0	ASTM D445
Viscosity at -51°C after 35 minutes after 3 hours viscosity change after 3 hours	mm ² /s %	19530 19600 0.2	max. 20000 max. 20000 max. 6.0	ASTM D2532
Flash point, COC	°C	240	min. 210	ASTM D92
Acid number	mg KOH/g	0.2	max. 0.50	ASTM D664
Evaporation loss, 6 h 30 at 204°C	%w	7.6	max. 15.0	ASTM D972
Static foam test at 40°C Foam volume / Collapse time	cm ³ /s	10/0	max. 100 / max. 60	FTM-S-791-3213
Thermal stability 96 h at 274°C change of viscosity at 40°C acid number change steel weight change	% mg KOH/g mg/cm ²	- 0.3 2.1 0.3	max. 5.0 max. 6.0 max. 4.0	FTM-S-791-3411

CHARACTERISTIC	UNIT	TYPICAL RESULT	MIL-PRF-7808 GRADE 4 LIMIT	TEST METHOD
Oxidation and corrosion test, 40 h at 220°C change of viscosity at 40°C acid number change metal weight change	% mg KOH/g	+12.2 3.2	-5.0 to +25.0 max. 4.0	ASTM D4636
Aluminium	mg/cm ²	0.0	max. +/- 0.2	
Silver	mg/cm ²	0.0	max. +/- 0.2	
Iron	mg/cm ²	0.0	max. +/- 0.2	
Steel / M50	mg/cm ²	0.0	max. +/- 0.2	
Titanium	mg/cm ²	0.0	max. +/- 0.2	
Bronze	mg/cm ²	0.0	max. +/- 0.4	
Magnesium	mg/cm ²	0.0	max. +/- 0.4	
Deposits	mg/cm ²	0.0	max. +/- 0.4	
	% w	0.0	max. 0.2	
Metal trace content				
Si	mg/kg	0.6	max. 2.0	
Sn	mg/kg	0.0	max. 1.0	
Ti	mg/kg	0.0	max. 1.0	
Ni	mg/kg	0.0	max. 2.0	
Fe	mg/kg	0.0	max. 2.0	
Mg	mg/kg	0.0	max. 2.0	
Al	mg/kg	0.3	max. 2.0	
Cu	mg/kg	0.0	max. 1.0	
Ag	mg/kg	0.0	max. 1.0	
Cr	mg/kg	0.0	max. 2.0	
Rubber swelling AMS 3217/1 168 h at 70°C	% vol.	22	12 to 35	FTM-S-791-3604
Contamination particles filtration time	mg/dm ³ min./dm ³	0.3 15	max. 5.0 max. 30	FTM-S-791-3013
Corrosion test at 232°C silver bronze	mg/cm ² mg/cm ²	- 1.1 - 1.1	max. +/- 4.50 max. +/- 4.50	FTM-S-791-5305
Lead corrosion test	g/m ²	- 0.4	max. 9.3	FTM-S-791-5321

The values above are typical values. They do not constitute any contractual commitment.

Sales specifications are available on request. The present technical data sheet replaces all the previous editions.