MIL-PRF-87257E
RADCOLUBE® FR257

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HYDRAULIC FLUID, FIRE RESISTANT, LOW TEMPERATURE, SYNTHETIC HYDROCARBON BASE, AIRCRAFT AND MISSILE

Synthetic, fire resistant hydraulic fluid consisting of synthetic hydrocarbon base oils and additives. Safe for use in low temperature aircraft.

NATO Code: H-538

Qualification Number: AFPET/PTPS 21-008
AFPET/PTPS 24-009

Qualification Date: 20 April 2021
22 July 2024

ISO 9001:2015 Certification No: C2024-00254

Shelf Life: 24 Months from DOM

Manufactured: LaFox, IL 60147 | Cage: 1RVC4

NATIONAL STOCK NUMBERS (NSN)	
9150-01-388-7769	Quart
9150-01-386-6687	Gallon
9150-01-391-2087	5 Gallon Pail
9150-01-387-4577	55 Gallon Drum

RADCO INDUSTRIES, INC.

CERTIFICATE OF TEST RESULTS FOR RADCOLUBE® FR257 FIRE RESISTANT HYDRAULIC FLUID

MIL-PRF-87257E HYDRAULIC FLUID, FIRE RESISTANT, LOW TEMPERATURE, SYNTHETIC HYDROCARBON BASE, AIRCRAFT AND MISSILE

Property	Requirement	Typical Result	Test Method
Acid number, mg·KOH/g	0.2 max	0.09	ASTM D664
Barium content, mg/kg	10 max	< 1	ASTM D5185
Color	MIL-PRF-87257E Section 3.2.1.4	Pass	MIL-PRF-87257E Secton 4.4.4
Compatibility	MIL-PRF-87257E Section 3.3.2	Pass	MIL-PRF-87257E Secton 4.4.1
Corrosiveness and oxidation stability (168 hours at 135 °C ± 1 °C)			ASTM D4636 Procedure 2
Change in acid number, mg·KOH/g	0.20 max	0.00	
Percent change in viscosity at 40 °C	± 10%	0.69%	
Metal specimen weight change, mg/cm²			
1010 Steel	± 0.2	0.008	
Aluminum	± 0.2	0.016	
Magnesium	± 0.2	0.000	
Cadmium plated steel (7)	± 0.2	0.008	
Copper (ASTM D130 Discloroation Standard)	± 0.6 (No. 3 max)	0.016 (2a)	(ASTM D130)
No pitting, etching, or visible corrosion on the surface of the metals	Pass	None	
Separation of insoluble materials or gumming of the fluid	None	Pass	
Evaporation loss (6.5 hours at 135 °C), weight percent	20% max	9%	ASTM D972
High temperature-high pressure spray ignition	Pass	Pass	FED-STD-791 Method 6052
Flame propagation cm/sec	0.5 max	0.26	ASTM D5306
Flash point, °C	160 min	178	ASTM D92
Fire point, °C	170 min	190	ASTM D92
Foaming characteristics at 24 °C			ASTM D892
Foaming tendency, mL (volume at end of five-minute blowing period)	65 max	50	
Foam stability, mL (volume at end of ten-minute settling period)	0 max	0	
Four-ball, use test condition A, scar diameter, mm			ASTM D4172
1 kg load	0.21 max	0.18	
10 kg load	0.30 max	0.25	
40 kg load	0.65 max	0.52	
High temperature stability			MIL-PRF-87257E Section 4.4.2
Percent change in viscosity at 40 °C	±5% max	0.5%	
Change in acid number, mg·KOH/g	0.1 max	0.09	
Formation of precipitate or insoluble material	None	None	
Isothermal secant bulk modulus at 40 °C and 27.6 Mpa (4000 psig), MPa (psi)	1379 min	1418 (205,664)	MIL-PRF-87257E Section 4.4.7
Low temperature stability, 72 hours at -54 °C ±1 °C	Pass	Pass	FED-STD-791 Method 3458
Particulate contamination			MIL-PRF-87257E Section 4.4.3.1
Particle count, AS4059 Contamination Class	Class 5 max	3	
Particle size range SAE AS4059 (ISO 11171), Differential, micrometers			FED-STD-791 Method 3012
5-15 (6-$14_{(c)}$)	8000 max	1151	
16-25 (15-$21_{(c)}$)	1425 max	62	
26-50 (22-$38_{(c)}$)	253 max	22	
51-100 (39-$70_{(c)}$)	45 max	8	
Over 100 (Over $70_{(c)}$)	8 max	0	
Gravimetric analysis, mg/100 mL	1.0 max	0.2	ASTM D4898
Pour point, °C	-60 max	≤ -63	ASTM D97
Relative Density at 15.6°C/15.6°C	MIL-PRF-87257E Section 3.3.4	0.8420	ASTM D4052
Rubber swell, standard synthetic rubber, NBR-L (18), percent change in volume	19.0 — 30.0%	22.5%	MIL-PRF-87257E Section 4.4.5
Storage stability (24°C ± 3°C for 12 months)	MIL-PRF-87257E Section 3.3.5	Pass	MIL-PRF-87257E Section 4.4.6
Viscosity stability at -54 °C, mm²/sec			ASTM D2532
3 hours	2500 max	2094	
72 hours	2500 max	2131	
Viscosity, mm²/sec			ASTM D445
at -40 °C (max)	550 max	461	
at 40 °C (min)	6.7 min	6.8	
at 100 °C (min)	2.0 min	2.1	
Water, mg/kg	100 max	52	ASTM D6304 Procedure A
Workmanship	MIL-PRF-87257E Section 3.4	Conforms	ISO 9001:2015