



The Industry Pioneer in
Tribology and Test Equipment

Falex Corporation

1020 Airpark Drive
Sugar Grove, IL 60554 U.S.A.
Phone: (630) 556-3669
Fax: (630) 556-3679
E-mail: lab@falex.com
Website: www.falex.com

Falex Tribology N.V.

Rotselaar, Belgium

Company: **Fuel Ox**
Date: February 16, 2021
Technician: N.Davies

Page: 1
Project No. 21-040
Test No. 1805602
Test Date: February 15, 2021

Method: ASTM D2783, Measurement of Extreme-Pressure Properties of Fluid Lubricants

Machine: Falex Four-Ball Extreme Pressure Test Machine

TEST PARAMETERS	
Speed (rpm):	1760 (\pm 40)
Temperature ($^{\circ}$ C):	23
Load (kg):	Varies/Stage
Duration (seconds):	10/Stage

TEST SPECIMENS	
Ball Material:	AISI-E52100
Hardness (HRc):	64-66
Grade:	25EP
Falex Lot No.	235
Falex TL No.	9100

TEST LUBRICANT	
Lubricant ID:	Liquid Friction Eliminator
Falex TL No.	9441

TEST RESULTS		
	Last Non-Seizure Load (kg):	200
	Weld Point (kg):	>800
	Load Wear Index:	\geq 260.8

COMMENTS:

An actual Load Wear Index (LWI) is not determinable due to the Weld Point (WELDPT) exceeding maximum limit.

DEFINITIONS:

LAST NON-SEIZURE LOAD, kg (LNSL)

The last load at which the measured scar diameter is not more than 5% above the compensation line at the load. Beyond this point, incipient seizure occurs, indicating momentary breakdown of the lubricating film. A higher LNSL indicates a more effective extreme pressure lubricant.

WELD POINT, kg (WELDPT)

The lowest applied load in kilograms at which the rotating ball welds to the three stationary balls indicating the extreme-pressure level to the lubricants-force (or newtons) has been exceeded. A higher WELDPT indicates a more effective extreme pressure lubricant.

LOAD WEAR INDEX (LWI)

The load-carrying property of a lubricant. It is an index of the ability of a lubricant to minimize wear at applied loads. A higher LWI indicates a more effective extreme pressure lubricant.



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WEAR DATA								
Applied Load (kg)	Ball Scar Diameter (mm)				Cmpn. Dia. (mm)	Cmpn. Dia. (mm) +5 %	LD _n Factor	Corrected Load Factor (kg)
	<u>Ball 1</u>	<u>Ball 2</u>	<u>Ball 3</u>	<u>Average</u>				
<u>6</u>							0.950	
<u>8</u>							1.400	
<u>10</u>					0.21	0.22	1.880	
<u>13</u>					0.23	0.24	2.670	
<u>16</u>					0.25	0.26	3.520	
<u>20</u>					0.27	0.28	4.740	
<u>24</u>					0.28	0.29	6.050	
<u>32</u>					0.31	0.33	8.870	
<u>40</u>					0.33	0.35	11.960	
<u>50</u>					0.36	0.38	16.100	
<u>63</u>					0.39	0.41	21.860	



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	Ball 1	Ball 2	Ball 3	Average				
<u>80</u>					0.42	0.44	30.080	
<u>100</u>					0.46	0.48	40.500	
<u>126</u>					0.50	0.53	55.200	
<u>160</u>					0.54	0.57	75.800	
<u>200</u>	0.557 0.545	0.562 0.574	0.561 0.551	0.558	0.59	0.62	102.200	183.045
<u>250</u>	0.607 0.642	0.610 0.619	0.617 0.629	0.621			137.500	221.536
<u>315</u>	1.124 1.175	1.168 1.163	1.101 1.196	1.155			187.100	162.061
<u>400</u>	1.022 0.969	1.009 0.993	1.010 0.944	0.991			258.000	260.299
<u>500</u>	1.155 1.142	1.144 1.109	1.164 1.159	1.146			347.000	302.924
<u>620</u>	1.359 1.489	1.380 1.557	1.365 1.492	1.440			462.000	320.759
<u>800</u>	1.601 1.846	1.578 1.908	1.602 1.854	1.732			649.000	374.820



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	Ball 1	Ball 2	Ball 3	Average
<u>810</u>	1.493 2.048	1.584 2.089	1.585 2.063	1.810
<u>820</u>	1.475 2.025	1.417 1.986	1.667 1.993	1.761
<u>830</u>	1.540 2.135	1.552 2.103	1.498 2.179	1.835
<u>840</u>	1.727 2.078	1.761 2.120	1.657 2.244	1.931
<u>850</u>	1.626 2.165	1.681 2.008	1.726 1.938	1.857
<u>860</u>	1.584 2.094	1.644 2.061	1.665 2.203	1.875
<u>870</u>	1.608 2.016	1.587 2.106	1.620 2.146	1.847
<u>880</u>	WELD			
<u>890</u>				
<u>1000</u>				
<u>1010</u>				