Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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1557

Accredited to ISO/IEC 17025:2017

Lubrizol Limited

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Testing performed at the above address only

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ENGINE TESTING: PETROLEUM AND PETROLEUM PRODUCTS, FUEL AND LUBRICANTS including additives	<u>Performance Tests</u>	Flexible scope enabling new versions of existing accredited standard test methods to be introduced in accordance with documented Lubrizol corporate procedure MT 511 (Updating External Test Methods) Documented In-House Procedures in brackets ( ), as listed below in support of standard methods
	Load carrying capacity test for transmission lubricants (FZG Rig)	CEC-L-07-95 (HNR.022 L-07_90C)
	Viscosity shear stability of transmission lubricants (Taper Roller Bearing Rig)	CEC-L-45-99 (HVWS.216 KRL_20H_CEC)
	FZG Scuffing Load Carrying Capacity Test for High EP Oils	CEC-L-84-02 (HNR.474 L-84_120C, HNR.381 L-84_90C)
	Direct Injection Common Rail Diesel Engine Coking Test using the Peugeot DW10 engine	CEC F-98-08 (HPDW.528)
	Engine Oil Performance Test to Measure the Effects of Biodiesel Fuel (OM646LA engine)	CEC L-104-16 (HBDD.632)
	Light Duty Diesel Piston Cleanliness & Ring Stacking Test WV TDI3 (EA288 Engine)	CEC L-117-20 (HDTI.719 PV1808)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ENGINE TESTING: PETROLEUM AND PETROLEUM PRODUCTS, FUEL AND LUBRICANTS including additives (cont'd)	<u>Performance Tests</u> (cont'd)	Flexible scope enabling new versions of existing accredited standard test methods to be introduced in accordance with documented Lubrizol corporate procedure MT 511 (Updating External Test Methods) Documented In-House Procedures in brackets ( ), as listed below in support of standard methods
	Engine Performanace Test to Quantify the Performanace of Heavy-Duty Cracnkcase Oils With Respect to Piston Cleanliness (Merceded Benz OM471 FE1 Engine)	CEC L-118-21 (HFSO.727, OM471_600HR)
PETROLEUM AND PETROLEUM PRODUCTS, FUEL AND LUBRICANTS including additives	<u>Chemical and Physical Tests</u>	Flexible scope enabling new versions of existing accredited standard test methods to be introduced in accordance with documented Lubrizol corporate procedure BTS 050 (Updating External Test Methods) Documented In-House Procedures in brackets ( ), as listed below in support of standard methods
	Apparent viscosity of engine oils between - 10 °C and - 35 °C	ASTM D5293 (BTS-H136) Using the cold cranking simulator
	Base number determination	ASTM D4739 (BTS-H290) Potentiometric titration
	Base number of petroleum products	ASTM D2896 (BTS-H087) Potentiometric perchloric acid titration

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
PETROLEUM AND PETROLEUM PRODUCTS, FUEL AND LUBRICANTS including additives (cont'd)	Chemical and Physical Tests (cont'd)	Flexible scope enabling new versions of existing accredited standard test methods to be introduced in accordance with documented Lubrizol corporate procedure BTS 050 (Updating External Test Methods) Documented In-House Procedures in brackets ( ), as listed below in support of standard methods
	Base number of petroleum products	ISO3771 (BTS-H408) Potentiometric perchloric acid titration
	Density	ASTM D4052 (BTS-H120)
	Determination of oxidation and nitration of used motor oils	DIN51453 (BTS-H359) Infra Red Spectrometry
	Determination of the soot content in used Diesel engine oils	DIN 51452 (BTS-H370) Infra Red Spectrometry
	Elemental Analysis : New Oils (B, Ba, Ca, Cu, Mg, Mo, Na, P, S, Si, Ti Zn)	ASTM D4951 (BTS-H401) ICP-AES
	Elemental Analysis : Old Oils (Ag, Al, Ba, B, Ca, Cd, Cr, Cu, Fe, K, Pb, Mg, Mn, Mo, Na, Ni, P, S, Sn, Ti, V, Zn)	ASTM D5185 (BTS-H400) ICP-AES
	Evaluation of hot surface oxidation	CEC L-85-99 (BTS-H329) Pressure differential scanning calorimetry
	Evaluation of oil elastomer compatibility	CEC-L-112-16 (BTS-H432, L-112_)
	Evaluation of the mechanical shear stability of lubrication oils containing polymers (Fuel injection pump)	CEC-L-14-93 (BTS-H117)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
PETROLEUM AND PETROLEUM PRODUCTS, FUEL AND LUBRICANTS including additives (cont'd)	<u>Chemical and Physical Tests</u> (cont'd)	Flexible scope enabling new versions of existing accredited standard test methods to be introduced in accordance with documented Lubrizol corporate procedure BTS 050 (Updating External Test Methods) Documented In-House Procedures in brackets ( ), as listed below in support of standard methods
	Evaporation loss of lubricating oils (Noack Evaporative Tester)	CEC-L-40-93 (BTS-H059)
	Flash and fire points by Cleveland Open Cup	ASTM D92 (BTS-H065)
	Flash point by Pensky-Martens Closed Cup	ASTM D93 (BTS-H066)
	Foaming characteristics of lubricating oils	ASTM D892 (BTS-H069) Air bath procedure
	Heptane insolubles in used lubricating oils	IP 316 (BTS-H076)
	High temperature foaming characteristics of lubricating oils	ASTM D6082 (BTS-H319) Air bath procedure
	Kinematic viscosity	ASTM D445 - manual determination (BTS-H137) ASTM D445 - automatic viscometer (BTS-H311)
	Low temperature pumpability Yield Stress and Apparent Viscosity	CEC-L-105-12(s) (BTS H414, L-105_) with ASTM D4684 (BTS-H139) Mini rotary viscometer
	Low temperature Viscosity of Lubricants measured	ASTM D2983 Method B (BTS-H135) Rotational Viscometer

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ENGINE TESTING: PETROLEUM AND PETROLEUM PRODUCTS, FUEL AND LUBRICANTS including additives (cont'd)	<u>Chemical and Physical Tests</u> (cont'd)	Flexible scope enabling new versions of existing accredited standard test methods to be introduced in accordance with documented Lubrizol corporate procedure BTS 050 (Updating External Test Methods) Documented In-House Procedures in brackets ( ), as listed below in support of standard methods
	Oxidation stability of lubricating oils used in Automotive Transmissions by artificial ageing (Laboratory Test)	CEC-L-48-00 Method B (BTS-H330) ASTM D7214 Sub-Test (BTS-H328) by IR Spectrometer referencing
	Oxidation test for Engine Oils operating in the presence of Biodiesel	CEC-L-109-14 (BTS H418, L-109_)
	Spectrophotometric determination of soot in used engine oil	CEC-L-82-97 (BTS-H303) UV Spectrometry
	Sulphated ash	ASTM D874 (BTS-H004)
	The measurement of lubricant dynamic viscosity under conditions of high shear	CEC-L-36-90 (BTS-H 176)
	Weak and strong acid number	ASTM D664 (BTS-H086)
END		