



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

SOUTHWEST RESEARCH INSTITUTE
Office of Automotive Engineering
Fuels and Lubricants Research Division and the
Engine, Emissions and Vehicle Research Division
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MECHANICAL

Valid To: May 31, 2018

Certificate Number: 0702.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform evaluations of automotive fluids, fuels, emissions, automotive components, engine and power train performance and durability using stationary engine dynamometer test stands (light-duty, non-road and heavy-duty) and vehicle dynamometer facilities, and automotive fleets using standards and procedures from the following sources:

ASTM, API, SAE, ACC, CRC, ACEA, CEC, ATIEL, JASO, NMMA, CFR, EPA, CARB, ISO, Passenger Car OEM'S, Heavy-Duty OEM'S, Two-Stroke OEM'S, Lubricant and Fuel Additive Company Proprietary Testing Procedures, and Lubricant and Fuel Marketer Proprietary Testing Procedures.

Fuels and Lubricants Research

- Crankcase Lubricant Evaluations (Gasoline, Diesel and Alternative Fuels)
- Fuels Performance Evaluations (Gasoline, Diesel and Alternative Fuels)
- Gear Oil Evaluation
- Specialized/focused Gasoline, Diesel, Alternative Fuels and Lubricants Evaluations
- Farm Tractor and Industrial Fluid Evaluations
- Automotive Component Evaluations (Engine Dynamometer/Bench Testing)
- Automatic and Powershift Transmission Evaluations
- Power Train (Driveability and Durability)

Engine, Emissions and Vehicle Research

Dynamometer Procedures

- Light-Duty Vehicle Chassis Dynamometer Emissions and Fuel Economy
- Heavy-Duty Engine Dynamometer Emissions and Fuel Consumption
- Non-road Engine Dynamometer Emissions and Fuel Consumption
- Smoke Tests
- California Diesel Fuel Qualification Protocols

(A2LA Cert. No. 0702.01) Revised 01/18/2018

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FUELS AND LUBRICANTS RESEARCH

Passenger Car Motor Oil (PCMO)

Evaluation of Automotive Engine Oils in the Sequence IIIF, Spark-Ignition Engine	ASTM D6984
Method for Evaluating Unleaded Automotive Spark-Ignition Engine Fuel for Electronic Port Fuel Injector Fouling	ASTM D5598
Method for Dynamometer Evaluation of Unleaded Spark-Ignition Engine Fuel for Intake Valve Deposit Formation	ASTM D6201
Evaluation of Automotive Engine Oils in the Sequence IIIG, Spark-Ignition Engine	ASTM D7320
VG Evaluation of Automotive Engine Oils for Inhibition of Deposit Formation in a Spark-Ignition Internal Combustion Engine Fueled with Gasoline and Operated Under Low-Temperature Light-Duty Conditions	ASTM D6593
IVA Evaluation of Automotive Engine Oils in the Sequence IVA Spark-Ignition Engines	ASTM D6891
Measurement of Effects of Automotive Engine Oils on Fuel Economy of Passenger Cars and Light-Duty Trucks in Sequence VID Spark Ignition Engine	ASTM D7589

Heavy Duty

Evaluation of Engine Oils in Diesel Four-Stroke Cycle Supercharged 1M-PC Single Cylinder Oil Test	ASTM D6618
Evaluation of Engine Oils in a High-Speed, Single-Cylinder Diesel Engine - 1K Procedure (0.4 % Fuel Sulfur) and 1N Procedure (0.04 % Fuel Sulfur)	ASTM D6750
Evaluation of Engine Oils in a High Speed, Single-Cylinder Diesel Engine - Caterpillar 1P Test Procedure	ASTM D6681
Evaluation of Heavy-Duty Engine Oils under High Output Conditions - Caterpillar C13 Test Procedure	ASTM D7549
Evaluation of Engine Oils for Roller Follower Wear in Light-Duty Diesel Engine	ASTM D5966
Evaluation of Diesel Engine Oils in T-8 Diesel Engine	ASTM D5967
Evaluation of Diesel Engine Oils in T-8E Diesel Engine	ASTM D5967
Evaluation of Diesel Engine Oils in the T-11 Exhaust Gas Recirculation Diesel Engine	ASTM D7156
Evaluation of Diesel Engine Oils in T-12 Exhaust Gas Recirculation Diesel Engine	ASTM D7422
Evaluation of Aeration Resistance of Engine Oils in Direct-Injected Turbocharged Automotive Diesel Engine,	ASTM D6894 Navistar 7.3L HEUI-EOAT
Evaluation of Automotive Engine Oils for Valve-Train Wear Performance in Cummins ISB Medium-Duty Diesel Engine	ASTM D7484
Cummins ISM Test	ASTM D7468 JD C00L
Valve Wear Train	JASO M354
Engine Oil Aeration Evaluation for dexos® Oil Qualification (GMAER)	GMW17295 (GMAER)
General Motors Oxidation and Deposit (GMOD)	GM17043 (GMOD)



FUELS AND LUBRICANTS RESEARCH

Gears / Axels

FZG Gear Testing	ASTM D4998
Standard Test Method for Evaluating the Scuffing Load Capacity of Oils (FZG Visual Method)	ASTM D5182
Evaluating the Thermal Stability of Manual Transmission Lubricants in a Cyclic Durability Test	ASTM D5579
Load Carrying Capacity Test For Transmission Lubricants	CEC L-07-95
Load Carrying Capacity Test For High EP Oils	CEC L-84-02
Method for Indicating Wear Characteristics of Non-Petroleum and Petroleum Hydraulic Fluids in a Constant Volume Vane Pump	ASTM D7043
Method for Evaluation of Moisture Corrosion Resistance of Automotive Automotive Gear Lubricants	ASTM D7038
Method for Indicating Wear Characteristics of Petroleum Hydraulic Fluids in a High Pressure Constant Volume Vane Pump	ASTM D6973
Evaluation of Load-Carrying Capacity of Lubricants Under Conditions of Low Speed and High Torque Used for Final Hypoid Drive Axles	ASTM D6121 (L-37)
Evaluation of the Thermal and Oxidative Stability of Lubricating Oils Used for Manual Transmissions and Final Drive Axles	ASTM D5704 (L-60-1)
Performance of Gear Lubricants in Axles Under High Speed and Shock Loading	ASTM D7452

Transmissions

Method for Evaluating the Thermal Stability of Manual Transmission Lubricants in a Cyclic Durability Test	ASTM D5579
Synchronizer Test	SS180

Allison

Appendix C Frictional Properties	TES 439
Wear Properties	TES 389
Appendix D Frictional Properties	TES 389
Wear Properties, Gears – Pumps	TO-4 Sect 5
Friction Properties	TO-4 Sect 6
Oxidation	TES-295
Frictional Characteristics with Paper Composite Clutches	TES-295
Frictional Characteristics with Paper Graphite Clutches	TES-295

General Motors – GM 6417 DEX III, GMN 10055 DEX IIIH, GMN 16444 DEX VI

Plate Clutch Friction Test	Appendix C
Oxidation Test	Appendix E
Cycling Test	Appendix F
Low Speed Clutch Friction Test	Appendix J
Aeration Test	Appendix K



FUELS AND LUBRICANTS RESEARCH

FORD-MERCON®, MERCON® V, MERCON® SP

Friction Durability	Mercon Appendix 4
Over-Running Clutch Wear Test	Mercon Appendix 4
Anti-Shudder Durability Test	Mercon Appendix 4
μ-V Characterization	Mercon Appendix 4

Fleet

Top Tier Detergent Gasoline Deposit Control Performance Standards:	
Intake Valve Sticking (IVS)	ASTM D6201
Sequential Central Port Injection (SCPI)	ASTM D6201
ASTM TC Sequences I, II, III	
CARB and EPA Procedures:	
Method for Evaluating Unleaded Automotive Spark-Ignition Engine Fuel for Electronic Port Fuel Injector (PFI) Fouling	ASTM D5598
Method for Vehicle Evaluation of Unleaded Automotive Spark-Ignition Engine Fuel for Intake Valve Deposit Formation – BMW IVD	ASTM D5500

Marine / Two-Cycle

NMMA FC-W 115 hp	NMMA FC-W
JASO	
Clutch Friction	JASO T-903
Lubricity	JASO M-340

Tractor

Tractor – John Deere	
Water Contamination / Dynamic Corrosion using SAUER-DANFOSS 90 Series Pump	JDQ: 84
Powershift Transmission Procedure	JDQ: 94
Spiral Bevel and Final Drive Gear Wear	JDQ: 95
As Performed with a 1400 Series Axle Brake Torque Variation & Friction Retention	JDQ: 96
New Holland: Jenkins, High Energy Clutch, Driveline Stall	
Evaluation of Hydraulic Fluid using the Denison Test Procedure for Hydraulic Fluid Performance Evaluation on Denison Pumps with T6H Hybrid Pump	Denison A-TP-30533

Filter Testing

Inlet Air Cleaning Equipment for Internal Combustion Engines and Compressors – Performance Testing	ISO 5011
Multi-Pass Method for Evaluating Filtration Performance of a Filter Element	ISO 16889
Full-Flow Lubricating Oil Filters for Internal Combustion Engines – Part 12: Filtration Efficiency using Particle Counting and Contaminant	ISO 4548 Part 12
Filtration Efficiency using Particle Counting and Contaminant Retention Capacity	ISO 19438
Hydraulic Fluid Power – Filters – Multi-Pass Method for Evaluating Filtration	ISO 16889



ENGINE, EMISSIONS AND VEHICLE RESEARCH

Emission Testing

Light-Duty Vehicle Federal Test Procedure-75 (Chassis Dynamometer Test) 40 CFR Part 86, Subpart B (Gasoline and Diesel Fueled)

With the exception of:

- *Evaporative Emissions*
- *Hot Soak Test*
- *Refueling Test*
- *Running Loss Test*

Light-Duty Vehicle Fuel Economy Test 40 CFR Part 600, Subpart B (Gasoline and Diesel fueled)

Otto-Cycle and Diesel-Cycle Engines Idle Test Procedure 40 CFR Part 86 Subpart P, (New Methanol, Natural Gas, Liquified Petroleum Gas and Gasoline-fueled)

New Diesel Heavy-Duty Engines; Smoke Exhaust Test Procedure 40 CFR Part 86 Subpart I, (Petroleum and Methanol-fueled) and ISO 8178-9

Particle Filter Systems, Construction Machines Swiss Ordinance on Air Pollution Control (OAPC), (Appendix 4, Section 31, 32); Particle Number Measurement in Accordance with European Union Regulation No. 49

Engine Emissions Testing Procedures 40 CFR Part 1065

Transmission Spin Loss Test SwRI TIP 03-2103

Procedure for Running 'Hydrogen Gas Emission Testing' per IEC 60896-21 Section SwRI TIP 07-054

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NOTE: This laboratory's scope contains withdrawn, cancelled or superseded methods. As a clarifier, this indicates that the applicable method itself has been withdrawn or is now considered "historical" and not that the laboratory's accreditation for the method has been withdrawn.





Accredited Laboratory

A2LA has accredited

SOUTHWEST RESEARCH INSTITUTE

San Antonio, TX

for technical competence in the field of

Mechanical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).



Presented this 11th day of July 2016.

A handwritten signature in black ink, appearing to read "L. Sen", written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 0702.01
Valid to May 31, 2018
Revised December 1, 2016

For the tests to which this accreditation applies, please refer to the laboratory's Mechanical Scope of Accreditation.