



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

SOUTHWEST RESEARCH INSTITUTE  
 Office of Automotive Engineering  
 Fuels and Lubricants Research Division  
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CHEMICAL

Valid To: May 31, 2024

Certificate Number: 0702.04

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on fuels, lubricants, and petroleum products:

<b>Spectroscopy:</b>	Atomic Absorption, Emission, Inductively Coupled Plasma (ICP), UV/Visible, Magnetic, X-ray Fluorescence
<b>Physical Properties:</b>	Appearance, Combustion, Conductivity, Density, Flash Point, Foaming Characteristics, Freezing Point, Gum Formation, Particle Size, Vapor Pressure, Viscosity, Volatility
<b>Chromatography:</b>	Gas Chromatography, Column Chromatography, Supercritical Fluid Chromatography, Mass Spectrometry
<b>Wet Chemistry Measurements:</b>	Titrametric, Volumetric, Gravimetric
<b>Thermal Analysis:</b>	Differential Scanning Calorimetry (DSC), Heat of Combustion, Thermogravimetric Analysis (TGA)
<b>Miscellaneous:</b>	Compatibility, Filter Testing, Oxidation, Wear Testing, Elastomer Testing

Test(s):	Test Method(s):
<b>Chromatography</b>	
<b>Column</b>	
Clay Gel	ASTM D2007
FIA	ASTM D1319
<b>Gas Chromatography</b>	
Aromatics	ASTM D5580
Aromatics by GC/MS	ASTM D5769
Benzene	ASTM D3606

<b>Test(s):</b>	<b>Test Method(s):</b>
<b>Chromatography (cont'd)</b>	
<b>Gas Chromatography (cont'd)</b>	
Ethanol Content	ASTM D5501
Fuel Dilution	ASTM D3524
Fuel Dilution by GC	ASTM D3525
Oil Volatility by GC	ASTM D6417
Oxygenates	ASTM D4815
Oxygenates by OFID	ASTM D5599
Simulated Distillation	ASTM D2887
<b>Supercritical Fluid Chromatography</b>	
Aromatics by SFC	ASTM D5186
Determination of Olefin Content of Gasolines by Supercritical Fluid Chromatography	ASTM D6550
<b>Miscellaneous</b>	
<b>Compatibility</b>	
Aniline Point	ASTM D611, Method E
Demusibility of Oils	ASTM D2711
Emulsion Characteristics	ASTM D1401
Miscibility	ASTM D4682
Water Reaction	ASTM D1094
<b>Oxidation</b>	
Copper Corrosion	ASTM D130
Corrosion of Aluminum Alloy	ASTM D4340
Corrosion Test	ASTM D1384
Oxidation Stability of Jet Fuels	ASTM D873
RBOT	ASTM D2272
Rust Prevention	ASTM D665
Rust Protection	ASTM D1748
TFOUT	ASTM D4742
Stability of Lubricating Oils Used in Automotive Transmission by Artificial Aging	CEC L-48
Hot Surface Oxidation	CEC L-85
Low Temperature Pumpability	CEC L-105
Oxidation Test for Engine Oils Operating in the Presence of Biodiesel Fuels	CEC L-109
<b>Wear Testing</b>	
Extreme Pressure Properties	ASTM D2783
Falex	ASTM D3233
HFRR	ASTM D6079
Wear Preventative	ASTM D4172
<b>Elastomer Testing</b>	
The Evaluation of Oil – Elastomer Compatibility	CEC L-112
Rubber Property – Effect of Liquids	ASTM D471

<b>Test(s):</b>	<b>Test Method(s):</b>
<b>Miscellaneous (cont'd)</b>	
Analysis of Aldehydes and Ketones in Exhaust by High Performance Liquid Chromatography	TIP 07C-006
Methanol and Ethanol Analysis by Capillary Column GC	TIP 07C-012
N <sub>2</sub> O Measurement by Gas Chromatography – Electron Capture Detector	TIP 07C-020
N <sub>2</sub> O Measurement by Fourier Transform Infrared (FTIR) Spectroscopy in Accordance with Part 1065	TIP 07C-022
<b>Physical Properties</b>	
<b>Appearance</b>	
Color Saybolt	ASTM D156
Color ASTM	ASTM D1500
<b>Engine Testing</b>	
Cetane	ASTM D613
MON	ASTM D2700
RON	ASTM D2699
<b>Combustion</b>	
Smoke Point	ASTM D1322
<b>Conductivity</b>	
Conductivity	ASTM D2624
<b>Density</b>	
Density	ASTM D1298; ASTM D287; ASTM D4052
<b>Flash Point</b>	
Fire Point	ASTM D92
Pensky Martens Flash	ASTM D93
Tag Flash Point	ASTM D56
Autoignition Temperature of Chemicals	ASTM E659
<b>Foaming Characteristics</b>	
Foam	ASTM D892
<b>Freezing Point</b>	
Cloud Point	ASTM D2500
Freeze Point	ASTM D2386
Pour Point	ASTM D97
Freezing Point of Antifreeze	ASTM D1177
<b>Gum Formation</b>	
Gum Content	ASTM D381

Test(s):	Test Method(s):
<b>Physical Properties (cont'd)</b>	
<b>Particulate Contamination</b>	
Particulate Contamination	ASTM D2276-89 <sup>1</sup>
Particulate Contamination in Middle Distillate Fuels	ASTM D6217
<b>Vapor Pressure</b>	
RVP	ASTM D5191
V/L	ASTM D5188
<b>Viscosity</b>	
Apparent Viscosity	ASTM D4684
Brookfield	ASTM D2983
Cold Crank	ASTM D5293
Cold Filter Plugging Point	ASTM D6371
TBS	ASTM D4683
Viscosity	ASTM D445; ASTM D5967, Annex A3 (VIT8)
High Shear High Temperature Viscosity Measurement	CEC L-36
<b>Shear</b>	
Shear Stability	ASTM D6278
Sonic Shear	ASTM D2603; ASTM D5621
Evaluation of Mechanical Shear Stability of Lubricating Oils	CEC L-14
Shear Stability of Transmission Lubricants	CEC L-45
<b>Volatility</b>	
Distillation	ASTM D86
Evaporation Loss	ASTM D972
NOACK	ASTM D5800
Evaporating Loss of Lubricating Oils	CEC L-40
<b>Spectroscopy</b>	
<b>Emission</b>	
Nitrogen Chem.	ASTM D4629
Sulfur by Antek	ASTM D5453
<b>ICP</b>	
Wear Metals	ASTM D5185
<b>Magnetic</b>	
Hydrogen by NMR	ASTM D3701; ASTM D4808
<b>UV/Visible</b>	
Naphthalene	ASTM D1840
Spectrophotometric Detection of Soot in Used Engine Oil Samples	CEC L-82

Test(s):	Test Method(s):
<b>Spectroscopy (cont'd)</b>	
<b>X-Ray Fluorescence</b>	
Sulfur	ASTM D2622; ASTM D4294
<b>FTIR</b>	
Oxidation by FTIR	D7214
<b>Thermal Analysis</b>	
<b>Heat of Combustion</b>	
Heat of Combustion	ASTM D240; ASTM D4809
<b>TGA</b>	
TGA Soot in Oils	ASTM D5967, Annex A4
<b>Wet Chemistry Measurements</b>	
<b>Gravimetric</b>	
Ash	ASTM D482
Ash Sulfated	ASTM D874
Bomb Sulfur	ASTM D129
Carbon Residue	ASTM D189; ASTM D524
Chlorine	ASTM D808
<b>Titrametric</b>	
Acid Base Number	ASTM D974
Acid Number	ASTM D3339; ASTM D664
Base Number	ASTM D2896; ASTM D4739
Nitrogen	ASTM D3228
Water by Karl Fisher	ASTM D6304
<b>Volumetric</b>	
Free Water	ASTM D4176
Insolubles	ASTM D893
Water and Sediment	ASTM D1796; ASTM D2709

<sup>1</sup> This laboratory's scope contains withdrawn 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

### Chemical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *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 April 2017).



Presented this 8<sup>th</sup> day of June 2022.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 0702.04  
Valid to May 31, 2024

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