



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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

Valid To: May 31, 2020

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 types of tests on fuels, lubricants, and petroleum products:

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

Test(s):

Test Method(s):

Chromatography

Column

Clay Gel
FIA

ASTM D2007
ASTM D1319

Gas Chromatography

Aromatics
Aromatics by GC/MS
Benzene
Ethanol Content
Fuel Dilution
Fuel Dilution by GC
Oil Volatility by GC
Oxygenates
Oxygenates by OFID

ASTM D5580
ASTM D5769
ASTM D3606
ASTM D5501
ASTM D3524
ASTM D3525
ASTM D6417
ASTM D4815
ASTM D5599

Test(s):	Test Method(s):
<u>Chromatography (cont'd)</u>	
Simulated Distillation	ASTM D2887
Supercritical Fluid Chromatography	
Aromatics by SFC	ASTM D5186
Determination of Olefin Content of Gasolines by Supercritical-Fluid Chromatography	ASTM D6550
<u>Miscellaneous</u>	
Compatibility	
Aniline Point	ASTM D611
Demusibility of Oils	ASTM D2711
Emulsion Characteristics	ASTM D1401
Miscibility	ASTM D4682
Water Reaction	ASTM D1094
Oxidation	
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
Wear Testing	
Extreme Pressure Properties	ASTM D2783
Falex	ASTM D3233
HFRR	ASTM D6079
Wear Preventative	ASTM D4172
Elastomer Testing	
The Evaluation of Oil – Elastomer Compatibility	CEC L-39, CEC L-112
Rubber Property – Effect of Liquids	ASTM D471
<u>Physical Properties</u>	
Appearance	
Color Saybolt	ASTM D156
Color-ASTM	ASTM D1500
Engine Testing	
Cetane	ASTM D613
MON	ASTM D2700

Test(s):	Test Method(s):
RON	ASTM D2699
<u>Physical Properties (cont'd)</u>	
Combustion	
Smoke Point	ASTM D1322
Conductivity	
Conductivity	ASTM D2624
Density	
Density	ASTM D1298, ASTM D287, ASTM D4052
Flash Point	
Fire Point	ASTM D92
Pensky Martens Flash	ASTM D93
Tag Flash Point	ASTM D56
ASTM E659	Autoignition Temperature of Chemicals
Foaming Characteristics	
Foam	ASTM D892
Freezing Point	
Cloud Point	ASTM D2500
Freeze Point	ASTM D2386
Pour Point	ASTM D97
Freezing Point of Antifreeze	ASTM D1177
Gum Formation	
Gum Content	ASTM D381
Particulate Contamination	
Particulate Contamination	ASTM D2276-89
Particulate Contamination in Middle Distillate Fuels	ASTM D6217
Vapor Pressure	
RVP	ASTM D5191
V/L	ASTM D5188
Viscosity	
Apparent Viscosity	ASTM D4684
Brookfield	ASTM D2983
Cold Crank	ASTM D5293
Cold Filter Plugging Point	ASTM D6371
TBS	ASTM D4683
Viscosity	ASTM D445; VIT8
High Shear High Temperature Viscosity Measurement	CEC L-36
Shear	
Shear Stability	ASTM D6278
Sonic Shear	ASTM D2603/5621

Test(s):	Test Method(s):
Evaluation of Mechanical Shear Stability of Lubricating Oils	CEC L-14
Shear Stability of Transmission Lubricants	CEC L-45
<u>Physical Properties (cont'd)</u>	
Volatility	
Distillation	ASTM D86
Evaporation Loss	ASTM D972
NOACK	ASTM D5800
Evaporating Loss of Lubricating Oils	CEC L-40
<u>Spectroscopy</u>	
Emission	
Nitrogen Chem.	ASTM D4629
Sulfur by Antek	ASTM D5453
ICP	
Wear Metals	ASTM D5185
Magnetic	
Hydrogen by NMR	ASTM D3701, ASTM D4808
UV/Visible	
Naphthalene	ASTM D1840
Spectrophotometric Detection of Soot in Used Engine Oil Samples	CEC L-82
X-Ray Fluorescence	
Sulfur	ASTM D2622, ASTM D4294
<u>Thermal Analysis</u>	
Heat of Combustion	
Heat of Combustion	ASTM D240, ASTM D4809
TGA	
TGA Soot in Oils	ASTM D5967 Annex A4
Gravimetric	
Ash	ASTM D482
Ash Sulfated	ASTM D874
Bomb Sulfur	ASTM D129
Carbon Residue	ASTM D189, ASTM D4530, ASTM D524
Chlorine	ASTM D808
Titrametric	
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

Test(s):**Volumetric**

Free Water
Insolubles
Water and Sediment

Miscellaneous

Analysis of Sulfate in Exhaust by Ion Chromatography
Analysis of Aldehydes and Ketones in Exhaust by High Performance Liquid Chromatography
Methanol and Ethanol Analysis by Capillary Column GC
N2O Measurement by Gas Chromatography – Electron Capture Detector
N2O Measurement by Fourier Transform Infrared (FTIR) Spectroscopy in Accordance with Part 1065
Specifications and Qualification Procedures for Aviation Jet Fuel Filter/Separators
Specifications and Qualification Procedures for Aviation Fuel Filter Monitors with Absorbent Type Elements

Test Method(s):

ASTM D4176
ASTM D893
ASTM D1796, ASTM D2709

TIP 07C-003
TIP 07C-006
TIP 07C-012
TIP 07C-020
TIP 07C-022
API/IP Specification 1581
API/IP Specification 1583



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 17025:2005 *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 April 2017).



Presented this 28th day of August 2018.

A blue ink signature of the Senior Director of Accreditation Services.

Senior Director, Accreditation Services
For the Accreditation Council
Certificate Number 0702.04
Valid to May 31, 2020
Revised December 9, 2019

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