



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, 2018

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

Method

Method Name

Chromatography

Column

ASTM D 2007
ASTM D 1319

Clay Gel
FIA

Gas Chromatography

ASTM D 5580
ASTM D 5769
ASTM D 3606
ASTM D 5501
ASTM D 3524
ASTM D 3525
ASTM D 6417
ASTM D 4815
ASTM D 5599

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

Method
Chromatography (cont'd)

ASTM D 2887

Supercritical Fluid Chromatography

ASTM D 5186

Miscellaneous

Compatibility

ASTM D 611
ASTM D 2711
ASTM D 1401
ASTM D 4682
ASTM D 1094

Oxidation

ASTM D 130
ASTM D 4340
ASTM D 1384
ASTM D 873
ASTM D 2272
ASTM D 665
ASTM D 1748
ASTM D 4742
CEC L-48

CEC L-85
CEC L-105
CEC L-109

Wear Testing

ASTM D 2783
ASTM D 3233
ASTM D 6079
ASTM D 4172

Elastomer Testing

CEC L-39
CEC L-112
ASTM D471

Physical Properties

Appearance

ASTM D 156
ASTM D 1500

Engine Testing

ASTM D 613
ASTM D 2700
ASTM D 2699

Method Name

Simulated Distillation

Aromatics by SFC

Aniline Point
Demusibility of Oils
Emulsion Characteristics
Miscibility
Water Reaction

Copper Corrosion
Corrosion of Aluminum Alloy
Corrosion Test
Oxidation Stability of Jet Fuels
RBOT
Rust Prevention
Rust Protection
TFOUT
Stability of Lubricating Oils used in Automotive
Transmission by Artificial Aging
Hot Surface Oxidation
Low Temperature Pumpability
Oxidation Test for Engine Oils Operating in the
Presence of Biodiesel Fuels

Extreme Pressure Properties
Falex
HFRR
Wear Preventative

The Evaluation of Oil – Elastomer Compatibility
The Evaluation of Oil – Elastomer Compatibility
Rubber Property – Effect of Liquids

Color Saybolt
Color-ASTM

Cetane
MON
RON



Method
Physical Properties (cont'd)

Method Name

Combustion

ASTM D 1322

Smoke Point

Conductivity

ASTM D 2624

Conductivity

Density

ASTM D 1298

ASTM D 287

ASTM D 4052

Density

Density

Density

Flash Point

ASTM D 92

ASTM D 93

ASTM D 56

Fire Point

Pensky Martens Flash

Tag Flash Point

Foaming Characteristics

ASTM D 892

Foam

Freezing Point

ASTM D 2500

ASTM D 2386

ASTM D 97

ASTM D 1177

Cloud Point

Freeze Point

Pour Point

Freezing Point of Antifreeze

Gum Formation

ASTM D 381

Gum Content

Particulate Contamination

ASTM D 2276-89

Particulate Contamination

Vapor Pressure

ASTM D 5191

ASTM D 5188

RVP

V/L

Viscosity

ASTM D 4684

ASTM D 2983

ASTM D 5293

ASTM D 6371

ASTM D 4683

ASTM D 445, VIT8

CEC L-36

Apparent Viscosity

Brookfield

Cold Crank

Cold Filter Plugging Point

TBS

Viscosity

High Shear High Temperature Viscosity Measurement



Method

Physical Properties (cont'd)

Shear

ASTM D 6278
ASTM D 2603 / 5621
CEC L-14

CEC L-45

Volatility

ASTM D 86
ASTM D 972
ASTM D 5800
CEC L-40

Spectroscopy

Emission

ASTM D 4629
ASTM D 5453

ICP

ASTM D 5185

Magnetic

ASTM D 3701
ASTM D 4808

UV/Visible

ASTM D 1840
CEC L-82

X-Ray Fluorescence

ASTM D 2622
ASTM D 4294

Thermal Analysis

Heat of Combustion

ASTM D 240
ASTM D 4809

TGA

ASTM D 5967 Annex A4

Method Name

Shear Stability
Sonic Shear
Evaluation of Mechanical Shear Stability of
Lubricating Oils
Shear Stability of Transmission Lubricants

Distillation
Evaporation Loss
NOACK
Evaporating Loss of Lubricating Oils

Nitrogen Chem.
Sulfur by Antek

Wear Metals

Hydrogen by NMR
Hydrogen by NMR

Naphthalene
Spectrophotometric Detection of Soot in Used Engine
Oil Samples

Sulfur
Sulfur

Heat of Combustion
Heat of Combustion

TGA Soot in Oils



Method
Wet Chemistry (cont'd)

Method Name

Gravimetric

ASTM D 482
ASTM D 874
ASTM D 129
ASTM D 189
ASTM D 4530
ASTM D 524
ASTM D 808

Ash
Ash Sulfated
Bomb Sulfur
Carbon Residue
Carbon Residue
Carbon Residue
Chlorine

Titrametric

ASTM D 974
ASTM D 3339
ASTM D 664
ASTM D 2896
ASTM D 4739
ASTM D 3228
ASTM D 6304

Acid Base Number
Acid Number
Acid Number
Base Number
Base Number
Nitrogen
Water by Karl Fisher

Volumetric

ASTM D 4176
ASTM D 893
ASTM D 1796
ASTM D 2709

Free Water
Insolubles
Water and Sediment
Water and Sediment

Miscellaneous

TIP 07C-002
TIP 07C-003

TIP 07C-006

TIP 07C-009
TIP 07C-012

TIP 07C-020

TIP 07C-022

API/IP Specification 1581

API/IP Specification 1583

Methane Quantitative Analysis
Analysis of Sulfate in Exhaust by Ion
Chromatography
Analysis of Aldehydes and Ketones in Exhaust by
High Performance Liquid Chromatography
Organic Solvent Extractions of Particulate Filters
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





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 8 January 2009).



Presented this 11th day of July 2016.

A handwritten signature in black ink, written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 0702.04
Valid to May 31, 2018
Revised November 30, 2016

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