



THE AMERICAN ASSOCIATION FOR
LABORATORY ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

**SOUTHWEST RESEARCH INSTITUTE,
OFFICE OF AUTOMOTIVE ENGINEERING**

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 18 June 2005*).



Presented this 8th day of October 2008.

A handwritten signature in cursive script, appearing to read "Peter Abney".

President

For the Accreditation Council

Certificate Number 0702.04

Valid to May 31, 2010

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

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

SOUTHWEST RESEARCH INSTITUTE
OFFICE OF AUTOMOTIVE ENGINEERING
Fuels and Lubricants Research Division
6220 Culebra Road, P.O. Drawer 28510
San Antonio, TX 78228-0510
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CHEMICAL

Valid To: May 31, 2010

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

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
ASTM D 2887

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

Supercritical Fluid Chromatography

ASTM D 5186

Aromatics by SFC

Miscellaneous

Compatibility

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

Aniline Point
Demusibility of Oils
Emulsion Characteristics
Miscibility
Water Reaction

Filter Testing

SAE HS-806

Oil Filter Test Procedure

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

Copper Corrosion
Corrosion of Aluminum Alloy
Corrosion Test
Oxidation Stability of Jet Fuels
RBOT
Rust Prevention
Rust Protection
TFOUT

Wear Testing

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

Extreme Pressure Properties
Falex
HFRR
Wear Preventative

Method**Method Name****Physical Properties****Appearance**ASTM D 156
ASTM D 1500Color Saybolt
Color-ASTM**Combustion**ASTM D 613
ASTM D 2700
ASTM D 2699
ASTM D 1322Cetane
MON
RON
Smoke Point**Conductivity**

ASTM D 2624

Conductivity

DensityASTM D 1298
ASTM D 287
ASTM D 4052Density
Density
Density**Flash Point**ASTM D 92
ASTM D 93
ASTM D 56Fire Point
Pensky Martens Flash
Tag Flash Point**Foaming Characteristics**

ASTM D 892

Foam

Freezing PointASTM D 2500
ASTM D 2386
ASTM D 1177Cloud Point
Freeze Point
Freezing Point of Antifreeze**Gum Formation**

ASTM D 381

Gum Content

Particle Size

ASTM D 2276

Particulate Contamination

Vapor PressureASTM D 5191
ASTM D 5188RVP
V/L**Viscosity**ASTM D 4684
ASTM D 2983
ASTM D 5293
ASTM D 6371
ASTM D 97
ASTM D 6278Apparent Viscosity
Brookfield
Cold Crank
Cold Filter Plugging Point
Pour Point
Shear Stability

Method**Method Name****Viscosity (cont.)**

ASTM D 2603 / 5621
ASTM D 4683
ASTM D 445, VIT8

Sonic Shear
TBS
Viscosity

Volatility

ASTM D 86
ASTM D 972
ASTM D 5800

Distillation
Evaporation Loss
NOACK

Spectroscopy**Atomic Absorption**

ASTM D 3237

Lead by AA

Emission

ASTM D 4629
ASTM D 5453

Nitrogen Chem.
Sulfur by Antek

ICP

ASTM D 5185

Wear Metals

Magnetic

ASTM D 3701
ASTM D 4808

Hydrogen by NMR
Hydrogen by NMR

UV/Visible

ASTM D 1840
ASTM D 3231

Naphthalene
Phosphorus

X-Ray Fluorescence

ASTM D 2622
ASTM D 4294

Sulfur
Sulfur

Thermal Analysis**DSC**

ASTM D 5483

Oxidation by DSC

Heat of Combustion

ASTM D 240
ASTM D 4809

Heat of Combustion
Heat of Combustion

TGA

ASTM D 5967 Annex A4

TGA Soot in Oils

Method

Method Name

Wet Chemistry

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