



The American Association for Laboratory Accreditation

World Class Accreditation

# Accredited Laboratory

A2LA has accredited

## RELIABLE ANALYSIS INC.

*Troy, MI*

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 27<sup>th</sup> day of August 2009.



A handwritten signature in black ink, appearing to read "Peter Abney".

President & CEO  
For the Accreditation Council  
Certificate Number 0386.01  
Valid to May 31, 2011

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



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

RELIABLE ANALYSIS INC.<sup>1</sup>  
379 Indusco Court  
Troy, MI 48083  
Ken-jen Lang Phone: 248 588 9770

MECHANICAL

Valid To: May 31, 2011

Certificate Number: 0386.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on adhesives, coatings (paints), deadeners, elastomers, foams, foundation board, metal, moldings, automotive paperboard, plastics, rubber, sealers, tapes, automotive textiles, body components and assemblies:

<u>Test</u>	<u>Standard</u>
Abrasion Resistance / Wear Resistance Taber	ASTM D4060; Chrysler LP-463KB-21-01; FLTM BN 108-02; GM 9515P; SAE J948
Wyzenbeek	Chrysler LP-463KB-06-01; GM 9082P; SAE: J948, J1530
Abrasion and Snagging Resistance	SAE J948
Accelerated Aging and Steaming	GM 9200P
Accelerated Corrosion Test	GM 9540P
Accelerated Exposure	GM 9125P
Acid Spotting Resistance	Chrysler LP-463KC-16-01
Adhesion Test	ASTM D3359; Chrysler LP-463LB-19-01; FLTM BI 106-01; GM: 9071P, 9758P, 9897P

<sup>1</sup> This accreditation covers testing performed at the main laboratory listed above, and at the satellite laboratory indicated.

<u>Test</u>	<u>Standard</u>
Adhesive Strength	FLTM BN 151-01
Air Permeability	ASTM D737*
Ash Content	ASTM: D2584, D5630 (Method B); FLTM BO-006-01; ISO 3451-1 (Method A)
Asphalt Staining of Exterior Plastics	Chrysler LP-463PB-57-02
Bleeding, Perspiration and Water Spotting	FLTM: AN 101-01, BI 113-03
Blocking Resistance	GMW 14132
Bond Strength	Chrysler LP-463LB-10-01 (except Proc. C); FLTM BN 121-01
Breaking Strength, Grab Method	ASTM: D2208, D5034*
Breaking Strength and Elongation	ASTM D5035* (Strip Method)
Brittleness by Means of a Mandrel	GM 9503P
Burning Behavior of Interior Materials (See also <i>Flammability</i> )	ISO 3795
Carbon Arc Weatherometer	ASTM: D1499, G152, G153; GM 9125P
CASS Corrosion	ASTM B368; FLTM BQ 105-01; GM 4476P
Cellular Material Urethane Foams	ASTM D3574 (except Secs. 23-29, 76-112)
Charpy Impact	ISO 179
Chemical Resistance (Battery Acid, Transmission Fluid, Other Chemicals)	Chrysler: LP-463PB-31-01, LP-463PB-57-03; FLTM BO 101-05; GM 9900P
Chemical Stress Resistance of Plastics	GM 9308P
Chip Resistance (Gravelometer)	GM 9508P; SAE J400
Cleanability	GM 9126P
Cleanability and Soilability	Chrysler LP-463KC-04-01; FLTM BN 112-08

\* Deviation from conditioning and testing environment requirements: maintained at  $23 \pm 2$  °C and  $50 \pm 5$  %RH.

<u>Test</u>	<u>Standard</u>
Coating Thickness on Sponge and Weatherstrip	GMN 4947
Coefficient of Friction	ASTM D1894
Coefficient of Linear Thermal Expansion by TMA	ASTM E831
Cold Cracking Resistance	ASTM D1912; Chrysler LP-463LB-11-01; GM 9140P; SAE J323 (Methods A and B)
Color Change Due to Temperature and Humidity	GM 9131P
Color Measurement	ASTM D2244; SAE J1545
Color Transfer of Sewing Thread	GM 9137P
Colorfastness to Crocking	AATCC Method 8*; GM 9033P
Colorfastness to Light	AATCC Method 16
Colorfastness to Water	AATCC Method 107
Compatibility Between Vinyl Leather	GM 9141P
Compression Load Deflection	ASTM D1056 (Secs. 17-22); ISO 3386
Compression Set	FLTM BN 115-07; ISO 1856
Condensing Humidity Resistance	ASTM D1735
Corrosion (CASS, Copper, Corrosion Test, Cosmetic Corrosion Lab Test / Cyclic, Salt Spray)	ASTM B117; FLTM BQ 105-01; GM 9540P; SAE J2334
Corrosion Creepback Test Method	GM 9102P
Crazing of Vinyl Material	GM 9143P
Crocking	FLTM: BN 107-02, BN 108-10
Crock Mar Resistance	Chrysler LP-463PB-54-01; FLTM BN 107-01; SAE J861

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<u>Test</u>	<u>Standard</u>
Cure Test	GM 9509P
Density	ASTM D1475; FLTM BN 106-01; ISO 1183-1 (Method A)
Dime Scrape	GM 9506P
Dimensional Measurement	ISO 1923
Dimensional Stability	FLTM: BN 105-03, BO 129-01; GM: 9230P, 9452P; SAE J883
Durometer Hardness (Shore A and D)	ASTM D2240
Dynamic Mechanical Analysis (DMA)	ASTM D4065
Environmental Cycle	Chrysler LP-463LB-12-01; GM 9505P
Exterior Weatherability (except Outdoor Weathering)	GM 9327P
Fabrics	
Test Methods, Coated Fabrics	ASTM D751* (except Secs. 18-25, 36-63, 65-70, 89-93)
Length	ASTM D3773* (Option A)
Width	ASTM D3774*
Fabric Count	ASTM D3775*
Mass	ASTM D3776* (Option C)
Weight Loss	GM 9337P*
Fastening Strength of Hook and Loop Tapes	GM 9207P
Fiber Deterioration	FLTM BN 117-03; GM 9771P
Fiber Loss	SAE J1530
Filiform Corrosion Test	FLTM BI 124-01
Flammability	FMVSS 302; GM 9070P; GMW 3232; Honda: HES C206-97, HES D 6003; ISO 3795; Mazda MES CF 050; Mitsubishi ES - X60410; SAE J369

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<u>Test</u>	<u>Standard</u>
Flex and Fold	Chrysler LP-463LB-09-01; FLTM BN 102-04
Flex Test / Newark Flex / "W" Flex	ASTM D2097; GM 9226P; FLTM: BN 002-03, BN 102-02
Flexibility of Automotive Textiles	GMW 3390
Flexural Strength / Flexural Properties	ASTM D790; ISO 178
Foam Deterioration	ASTM D3574 (Method J); FLTM BO 012-01
Foam Laminate Curl Test	GM 9330P
Fogging Test	Chrysler LP-463DB-12-01; GMW 3235; SAE J1756
Friction Test	ASTM D1894; Chrysler LP-463AB-52-01
FTIR	ASTM D2702; GM 9035P
Fuel Resistance	FLTM BO 101-05
Gasoline Dip Test	GM 9501P
Glass Content	GM 9077P
Gloss Measurement	ASTM D523
Grain Retention	GM 9142P
Gravelometer	SAE J400
Grind-Saw Test	ASTM B571 (Section 8)
Heat Aging / Oven Aging	Chrysler LP-463LB-13-01; FLTM BN 113-02; GM 9504P
Humidity, Hot and Cold Cycling, Resistance of	Chrysler LP-463LB-12-01
Humidity Resistance	GM 4465P

<u>Test</u>	<u>Standard</u>
Hydrogen Sulfide Resistance	ASTM D1712; FLTM AN 102-01; GM 9069P; GMW 14864; SAE J322
Immersion	FLTM BI 104-04
Impact, Izod	ASTM D256
Impact Resistance	ASTM D256; FLTM BO 151-01; GM 9300P
Indentation Force Deflection Test	ASTM D3574 (Method B1)
Knife Cross Hatch Adhesion Test	GM 9502P
Lint Pickup and Lint Retention	Chrysler LP-463KB-38-01 (Method A); GM 9139P
Lint Retention	GMW 3347
Loop Pullout	GM 9127P
Mace Snagging	FLTM BN 108-11
Mar Resistance	GM 9150P
Mass and Thickness Determination	SAE: J860 (Mass), J882 (Thickness)
Melt Flow	ASTM D1238; ISO 1133
Melting Point by DSC	ASTM E1356
Microtensile Specimen Test	ASTM D1708
Migration from Plastic Part to Paint	Chrysler LP-463DD-06-01
Migration Staining and Blocking Resistance	FLTM BN 103-01
Mildew Resistance	GM 9128P; GMW 3259
Modulus of Bending	SAE J949
Mold Shrinkage	ISO 2577
Multi-axial Impact	ASTM D3763; GM 9904P

<u>Test</u>	<u>Standard</u>
Odor Test	FLTM BO 131-01; GMW 3205; SAE J1351
Ozone Resistance	ASTM D1149; FLTM BP 101-01; GM 4486P
Paint Adhesion	FLTM BI 106-01
Paint Thickness	GM 9518P
Peel Strength	ASTM D903; Chrysler LP-463TB-03-01; GM 9797P
Pencil Hardness of Paint Film	ASTM D3363
Perspiration Staining Resistance	Chrysler LP-463KC-21-01; FLTM: BI 113-03, BI 113-06; GM: 9240P, 9517P
Pilling and Minking Resistance	Chrysler LP-463KB-37-01; FLTM: BN 108-03, BN 108-14; GM: 9635P, 9652P
Pliability	GM: 9151P, 9664P
Poisson's Ratio	ASTM E132
Puncture Properties of Plastics <i>(See also Multi-axial Impact)</i>	ASTM D3763; GM 9904P
Resistance to Abrasion, Bearing and Fiber Loss of Content Material <i>(See also Wyzenbeek Abrasion)</i>	SAE J1530
Resistance to Consumer Cleaning	GM 9900P
Resistance to Snagging	FLTM BN 108-11
Salt Spray	ASTM B117; FLTM BI 103-01; GM 4298P
Scratch and Mar Resistance	Chrysler LP-463DD-18-01; FLTM BN 108-13; GMN 3943
Scuffing Resistance	FLTM BN 108-04; GM 9150P; SAE J365

<u>Test</u>	<u>Standard</u>
Seam Fatigue Test	FLTM BN 106-02; GMW 3405
Seam Strength	Chrysler LP-463KB-13-01; FLTM BN 119-01; GM 9129P
Shear Test	ASTM D732; Chrysler LP-463TB-08-01; FLTM: BU 101-06, BV 120-02
Shrinkage Test	FLTM BN 105-01
Softening Point of Adhesive Tapes	Chrysler LP-463TB-14-01
Solvent Wipe Resistance	Chrysler LP-463PB-31-01; GM: 9509P, 9900P
Specific Gravity / Density of Plastics	ASTM D792
Spue Test	Chrysler LP-463LB-05-01
Stability of Adhesives and Sealers	GM 9763P
Staining (Contact, Migration and Diffusion)	ASTM D925
Stiffness	Ford WSB-M1F17-B (Sec. 3.13)
Stitch Tear	ASTM D4705; GM 9149P
Stress Cracking	FLTM BO 127-03
Stress Mark Susceptibility	GM 9302P
Stretch and Set of Textile, Leather	SAE J855
Sulfur Dioxide Spot Test	GM 9736P
Sunlamp Oven Test	FLTM: BO 115-01, BO 115-02; GM 9897P
Suntan Lotion and Insect Repellant	Ford: DVM 0036, DVM 0039; GMN 10033; GMW 14445
Tensile Strength / Tensile Properties	ASTM: D412 (Method A, except Secs. 12.2 and 12.3), D638, D882, D1708; Chrysler: LP-463NB-17-01, LP-463TB-04-01; FLTM BN 150-04; GMW 3010 (Code B); ISO: 527, 1798

<u>Test</u>	<u>Standard</u>
Tear Strength / Resistance	ASTM: D624 (Die C, except Appendix), D1004, D2261 *, D5587 *, D5733 *, E1131-03; FLTM BN 150-02; GM 9149P
Thermogravimetric Analysis (TGA)	ASTM E1131
Thumbnail Hardness	GM 9507P
Topcoat Adhesion of Vinyls	GM 9160P
Tuft Lock Test for Carpet (Using MTS Machine)	Chrysler LP-463KB-22-01
Variable Surface Temperature Heat Exposure Test	GM 9310P
“W” Flex	FLTM BN 002-03
Water Absorption	ASTM: D570, D1056
Water Immersion	FLTM BI 104-01
Water Repellency Test	GM 9317P
Water Spotting and Soap Spotting Resistance	Chrysler LP-463KC-03-01; FLTM: AN 101-01, BI 113-01; GM 9133P
Weathering Exposure (except Outdoor Exposures)	GM 9538P
Weatherometer	AATCC Method 16; ASTM D1499; GM: 9125P, 9327P
Weatherstrip Coating Cure Test	GM 9770P
Wicking Test	GM 9146P (except Sec. 4.3); SAE J913
Wrinkle Resistance	GM 9897P
Xenon Exposure	AATCC Method 16; FLTM BO 116-01; SAE: J1885, J1960

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RELIABLE ANALYSIS INC.  
1801 Thunderbird Street  
Troy, MI 48084

<u>Test</u>	<u>Standard</u>
Grain Size	ASTM E112
SEM / EDS	ASTM E986
Simultaneous Thickness and Electrode Potential Determination of Individual Layers in Multilayer Nickel Deposit (STEP Test)	ASTM B764; GM 4260P (Method 4)
STEP Test	ASTM B764

Environment Exposure:

- Temperature (-65 to 177) °C with humidity 20 to 95% up to 85 °C
- Chamber size (max.) to 26 ft. deep by 16 ft. wide by 10 ft. high (full vehicles)

Structure: hoods, decklids, fenders, other automotive components

- Deflection and set  $\pm 3$  in. displacement, 10,000 lbf
- Impact  $9.8 \text{ m/s}^2$  max., 500 lbf
- Slam – Durability 1 Hz max.
- Dimensional stability, including the use of LVDTs, load cells and pressure transducers

Pneumatic Cycling Durability: (ambient or (-40 to 120) °C)

- Sunshade assemblies
- Hood systems
- Rear compartment systems
- Consoles
- Ashtrays
- Glove boxes
- Armrests
- Door handles
- Trim panels (interior and exterior)
- Latches
- Mirrors

Servo Hydraulic Fatigue Test for Load or Displacement:

- 2.5 to 11 KIP
- Up to 6.0 inches travel
- 30 GPM pump
- 3000 psi pressure
- 10 Hz max. frequency

Thermal Shock:

- (-40 to 177) °C
- 8 ft<sup>3</sup> basket

Voltage Measurement to 1000 VAC DC:

- Resistance: Megohms
- Current measurement as required

Airbag Deployment:

- High speed imaging to 2000 frames/sec.
- Deployment testing performed, inside conditioning chamber
- Three (3) high speed cameras

Pressure Testing of Containers and Hoses for:

- Burst, ambient and at temperature      20,000 psi max. and 200 °C max. temp.
- Fatigue, variable pressure, time      (-30 to 120) °C max. temps., 2 GPM, 66 psi
- Coolant proof (leakage)
- Creep (movement)

*The laboratory is accredited for the test methods listed above. The accredited test methods are used in determining compliance with any material specifications included on this Scope; however, the inclusion of these material specifications on this Scope does not confer laboratory accreditation to the material specifications. Inclusion of these material specifications on this Scope also does not confer accreditation for every method embedded within the specification. Only the methods listed above on this Scope are accredited.*