



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

RELIABLE ANALYSIS INC.  
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Madison Heights, MI 48071  
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MECHANICAL

Valid To: August 31, 2017

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:

<b><u>Test:</u></b>	<b><u>Standard:</u></b>
<b>Abrasion</b>	
Crocking	AATCC 8; FLTM BN 107-01; FLTM BN 107-02; FLTM BN 108-10; GM 9033P <sup>1</sup> (07/13 inactive, no replacement); SAE J861
Crock/Mar	LP-463PB-54-01
Martindale	GMW15651; ISO 12947
Snagging	SAE J948
Taber	ASTM D4060; LP-463KB-21-01; FLTM BN 108-02; GM 9337P; GM 9515P <sup>1</sup> (07/13 inactive, no replacement); GMW3208; SAE J948
Wyzenbeek	LP-463KB-06-01; GM 9082P <sup>1</sup> (10/12 inactive, no replacement); SAE J948
Fiber Loss after Abrasion	SAE J1530

**Test:****Standard:****Adhesion**

Dime Scrape

GM 9506P<sup>1</sup> (06/13 inactive, no replacement)

Paint/Tape

ASTM D3359;  
LP-463LB-19-01;  
FLTM BI 106-01;  
GM 9071P<sup>1</sup> (09/12 inactive, replaced by GMW14829);  
GM 9758P<sup>1</sup> (06/11 inactive replaced by GMW15201);  
GM 9502P<sup>1</sup> (08/12 inactive, no replacement);  
GM 9160P;  
GMW14829;  
GMW15201

Saw Grind

ASTM B571 (sec 8)

Thumbnail

GM 9507P<sup>1</sup> (06/11 inactive, no replacement)**Air Permeability**ASTM D737;  
ASTM D3574 (Method G);  
ISO 7231**Appearance**

Color

ASTM D2244;  
SAE J1545

Gloss

ASTM D523

Grain Retention

GM 9142P

**Bending/Flex/Mandrel**

Cantilever/Textile

GM 9664P;  
GMW3390

Chemical Stress

FLTM BO 127-03;  
GM 9308P<sup>1</sup> (03/11 inactive, no replacement);  
GMW15790

Ductility

ASTM B490

Mandrel/Brittleness

GM 9503P<sup>1</sup> (06/12 replaced by GMW16746)  
GMW16746

Mandrel/Cold flex

LP-463LB-11-01;  
GMW3154;  
GMW14108;  
SAE J323-A

Mandrel/Flex

Stiffness

ASTM D747

**Test:****Standard:****Chemical Resistance**

Acid Spotting

LP-463-KC-16-01

Automotive Fluids

GM 9509P;  
GM 9900P<sup>1</sup> (03/10 inactive, replaced by GMW14334);  
GMW14334;  
LP-463PB-31-01

Cure

GM 9509P<sup>1</sup> (10/12 replaced by GMW15891);  
GMW15891

Chemical Staining

LP-463PB-57-03;  
FLTM AN 101-01

Fuel

FLTM BO 101-05;  
GMW14333

Perspiration

FLTM BI 113-03; FLTM BI 113-06;  
GM 9240P<sup>1</sup> (07/13 inactive, no replacement);  
GM 9517P<sup>1</sup> (12/12 inactive, replaced by GMW14334);  
GMW14296;  
GMW14334;  
LP-463KC-21-01

Spotting:

Water

LP-463KC-03-01;  
GMW14102

Water &amp; Soap

FLTM BI 113-01

Salt Stain

GM 9133P

Suntan/Insect Repellent

Ford DVM0036;  
Ford DVM0039;  
FLTM BI 113-08;  
GMN10033<sup>1</sup> (03/11 inactive, replaced by GMW14445);**Coefficient of Linear Thermal  
Expansion by TMA**

ASTM E381

**Coating Thickness/Composition**

Coulometric

ASTM B504;  
ISO 2177

Microscope

ASTM B487;  
GMN4947<sup>1</sup> (05/10 replaced by GMW15726);  
GMW15726;  
ISO 1463

S.T.E.P. Test

ASTM B764;  
GM 4260P-Method 4<sup>1</sup> (10/13 inactive, no replacement)

**Test:****Standard:****Compatibility**

Water Colorfastness

AATCC 107

Color Trans Thread

GM 9137P

Vinyl Leather

GM 9141P;  
GMW4659

Migration Staining

ASTM D925;  
LP-463DD-06-01;  
FLTM BN 103-01;  
GMW14069<sup>1</sup> (Inactive 03/01/2011);  
GMW14141;  
ISO 15701**Compression/Foam**

Compression Set

FLTM BN 115-07;  
ISO 1856

Foam Testing

ASTM D3574 (A, B1, C, D, E, F, G, H, I3, J, K, L,  
X3.1, X3.3, X6)

Load Deflection

ASTM D1056 (Sec. 17-22);  
ISO 3386**Corrosion/Salt Spray**

CASS

ASTM B368;  
FLTM BQ 105-01;  
GM 4476P<sup>1</sup> (12/10 replaced by GMW14458);  
GMW14458

Creepback

GM 9102P;  
GMW15282

Salt Spray

ASTM B117;  
FLTM BI 103-01;  
GM 4298P<sup>1</sup> (12/10 replaced by GMW3286);  
GM 9540P<sup>1</sup> (03/10 replaced by GMW14872);  
GMW3286;  
GMW14872;  
SAE J2334**Density/Weight**ASTM D1475;  
FLTM BN 106-01;  
GMW3182;  
ISO 1183-1, Method A

Mass

ASTM D3776-C;  
SAE J860

Thickness

SAE J882

**Test:**

**Standard:**

**Density/Weight (cont.)**

Specific Gravity

ASTM D792

Water Absorption

ASTM D570;  
ASTM D1056 (Sec. 43 through 49)

Water Repellency

GM 9317P;  
GMW4726

**Dimensional/Measuring/Shrinkage**

Fabrics

Length

ASTM D751 (*excluding 18-25, 36-63, 65-70, 89-93*)

Width

ASTM D3773-A

Fabric Count

ASTM D3774

ASTM D3775

Measurements

FLTM BN 105-01;  
FLTM BN 105-03;  
FLTM BO 129-01;  
GM 9230P;  
GM 9330P;  
GM 9452P<sup>1</sup> (12/10 replaced by GMW4217);  
GMW4217;  
GMW14773;  
ISO 1923;  
ISO 2577;  
SAE J883

Stretch & Set

GMW3211;  
SAE J855

**Emissions**

Aldehydes and Ketones

FLTM BZ 156-01 Parts A & B;  
VDA 275;  
PV 3925;  
EN 717-3;  
GMW15635;  
STD 429-0002;  
ISO DIN 17226-2;  
DIN EN ISO 14184-1

Total VOC

FLTM BZ 157-01;  
GMW8081;  
PV 3341;  
VDA 277;  
TS-INT-002;  
STD 429-0003

VOC/SVOC/FOG

VDA 278;  
GMW15634

**Test:****Standard:****Flammability**

ASTM D635; CMVSS 302; DBL 5307; DIN75-200;  
EDS-T-7602<sup>1</sup> (replaced by GMW3232);  
FMVSS 302; FLTM BN 024-02; GB 8410;  
GM 9070P<sup>1</sup> (09/11 replaced by GMW3232);  
GMNA6090M<sup>1</sup> (09/11 inactive, no replacement);  
GMW3232; HES D 6003; ISO 3795;  
Mazada MES CF 050C; Mitsubishi ES-X60410;  
Nissan NES M0094; SAE J369;  
Toyota TSM0500G; TSM0504G;  
Volvo Std 5031,1<sup>1</sup> (01/11 replaced by STD 104-0001)

**Flex/Fold**

Bally Flex

ASTM D6182;  
ISO 5402

Cold Fold

ASTM D1912

Flex &amp; Fold

FLTM BN 102-04;  
LP-463LB-09-01

Pinch Fold

LP-463KB-28-01-C

Newark/W Flex

ASTM D2097;  
FLTM BN 002-03;  
FLTM BN 102-02

Vinyl Crazing

GM 9143P

**Fogging**

LP-463DB-12-01;  
GMW3235;  
SAE J1756;  
DIN 75201

**FTIR-Infrared Analysis**

ASTM E334;  
ASTM E1252

**Gas Fade/Burnt Gas**

AATCC 23;  
ISO 105-G02

**Hardness**

Pencil

ASTM D3363

Durometer (A&amp;D)

ASTM D2240

**Humidity**

ASTM D1735;  
ASTM D2247;  
GMW14729

**Test:****Standard:****Imaging**

3D Scanning Methodology:

Scanning Volume –  
200mm x 150mm x 150mm

Customer Supplied Specifications

**Impact**

Ball, Tup, Pendulum

FLTM BO 151-01;  
GMW14093;  
ISO 6603-1

Charpy

ISO 179

Cold Crack

GMW14126;  
GMW14127;  
SAE J323-B

Gravelometer/Chip Resistance

GMW14700;  
SAE J400

Izod

ASTM D256;  
ISO 180

Multi-Axial

ASTM D3763;  
GM 9904P<sup>1</sup>  
(05/11 replaced by ASTM D3763 / ISO 1431-1);  
ISO 1431-1; ISO 6603-2

Stress Mark Susceptibility

GM 9302P<sup>1</sup> (03/14 replaced by GMW17141)**Immersion**

Water

FLTM BI 104-01;  
FLTM BI 104-04

Wicking

GM 9146P (*except 4.3*);  
SAE J913**Mace Snagging**

FLTM BN 108-11

**Melt Flow**ASTM D1238;  
ISO 1133**Melting, Crystallization, and Tg  
(DSC)**ASTM E794;  
ASTM E1356;  
ASTM D3418;  
ISO 11357**Mildew, Mold, Fungi**ASTM G21;  
GMW3259;  
GMW16124

<b><u>Test:</u></b>	<b><u>Standard:</u></b>
<b>Odor</b>	LP-463KC-09-01; FLTM BO 131-01; FLTM BO 131-03; GMW3205; SAE J1351; VW PV3900; VDA 270
<b>Ozone</b>	ASTM D1149; FLTM BP 101-01; GM 4486P <sup>1</sup> (12/12 inactive, replaced by ISO1431-1); ISO 1431-1
<b>Oven/Exposure Cycle</b> Accelerated Aging	FLTM BN 113-02; GMW14709; LP-463LB-13-01
Ash Content	ASTM D2584; ASTM D5630-B; FLTM BO 006-01; GM 9077P <sup>1</sup> (Inactive 3/2013, no replacement); ISO 3451-1 (Method A)
Blocking	GMW14132
Color Change	GM 9131P
Dust Out	GM 9635P <sup>1</sup> (09/13 inactive, replaced by GMW16998); GMW16998
Environmental Cycle	LP-463LB-12-01; GMW14124 (All Tables)
Shear	FLTM BV 120-02
Softening Point- Adhesive Tapes	LP-463TB-14-01
Spue Test	LP-463LB-05-01
Stab. Adhesives/Sealers	GM 9763P <sup>1</sup> (09/11 inactive, replaced by GMW15735); GMW15735
Sunlamp Oven	FLTM BO 115-01; FLTM BO 115-02; GM 9897P <sup>1</sup> (Inactive 05/01/2011); GMW 14757
VOC Sealers/Adhesives	GMW3016
<b>pH of Aqueous Solutions</b>	ISO 3071; ISO 4045



**Test:****Standard:****Pilling/Minking/Lint**

Brush &amp; Sponge

LP-463KB-37-01;  
FLTM BN 108-03;  
FLTM BN 108-14;  
GM 9652P

Random Tumbler

LP-463KB-38-01-A;  
GM 9139P<sup>1</sup> (06/11 inactive, replaced by GMW3347);  
GMW3347;  
GMW4749<sup>1</sup> (Inactive 03/01/2011)**Plastics**Determination of Temperature of  
Deflection Under Load  
Determination of Vicat Softening  
Temperature

ISO 75-1; ISO 75-2;

ISO 306

**Ravel Resistance**

Scott-type

GMW3217

**Scratch/Mar**

5 Finger

LP-463DD-18-01;  
FLTM BN 108-13;  
GMN3943<sup>1</sup> (01/11 replaced by GMW14698);  
GMW14698

Erichsen Scratch and Mar

GMW14688;  
LP-463DD-18-02;  
PV3952;  
7-M0005

Paperclip

GM 9150P<sup>1</sup> (Inactive 12/01/2012);  
GMW14130

Shear Scratch

8320Z-SW5-9000;  
3520Z-SFY-0000;  
TSL3610G;  
TSL5100G;  
TSM5754G;  
TSM6734G**Scuffing/Mar**

Taber Scuff Finger

FLTM BN 108-04;  
SAE J365**Seam Strength**

Conditioning + Tensile

LP-463KB-13-01(*except B*),  
(superseded by MS.50019 Annex A);  
MS.50019 Annex A;  
FLTM BN 119-01;  
GMW14145

**Test:****Standard:****Seam Strength (cont.)**

Seam Fatigue

FLTM BN 106-02;  
GMW3405;  
GM 9129P**Soiling & Cleanability**FLTM BN 112-08;  
LP-463KC-04-01;  
GM 9126P<sup>1</sup> (04/12 inactive, replaced by GMW3402);  
GM 9156P;  
GMW3402

Martindale

LP-463KC-04-03;  
GMW3402/GMW15377**Staining**

Asphalt

LP-463PB-57-02

**Sulfur Dioxide Resistance**

High Humidity

ASTM G87;  
GMW14728;  
ISO 3231

Kesternich

ASTM D1712;  
FLTM AN 102-01;  
GMW 14864;  
SAE J322

Spot Test

GM 9736P<sup>1</sup> (03/11 inactive, replaced by GMW14864);  
GMW14864**TGA - Thermogravimetric Analysis**

ASTM E1131

**Thermal Shock**FLTM BI 107-05;  
GMW15919**Tensile**

Adhesive Strength

FLTM BN151-01;  
GM 9897P<sup>1</sup> (05/11 inactive, replaced by GMW14757);  
GMW14757

After Autoclave

ASTM D3574-J;  
FLTM BO 012-01

Bond Strength

LP-463LB-10-01<sup>1</sup> (superseded by LP.7M008);  
FLTM BN 121-01;  
GMW3220;  
LP-7M008

Breaking Strength

ASTM D2208;  
ASTM D5034;  
ASTM D5035

**Test:****Standard:****Tensile (cont.)**

Coefficient of Friction	ASTM D1894
Hook & Loop	GM 9207P
Flexural Properties	ASTM D790; ISO 178
Friction	ASTM D1894; GMW3289; LP-463AB-52-01
Indentation Force Deflection	ASTM D3574-B1
Loop Pull-Out	GM 9127P <sup>1</sup> (03/11 inactive, replaced by GMW14148); GMW14148
Modulus of Bending	SAE J949
Peel	ASTM D903; LP-463TB-03-01; GM 9797P <sup>1</sup> (03/11 inactive, no replacement)
Poisson's Ratio	ASTM E132
Shear Test	ASTM D732; LP-463TB-08-01; FLTM BU 101-06
Snag	GMW14775
Stitch Tear	ASTM D4705; GM 9149P; GMW14146
Tensile Properties (-40 to 120C) (≤ 20 000 lbs)	ASTM D412-A ( <i>except 12.2, 12.3</i> ); ASTM D638; ASTM D882; ASTM D1708; LP-463NB-17-01; LP-463TB-04-01; FLTM BN 150-04; GMW3010; GMW14695; ISO 037; ISO 527; ISO 1798

**Test:****Standard:****Tensile (cont.)**

Tear

ASTM D624 (die C, *except appendix*);  
 ASTM D1004;  
 ASTM D2261;  
 ASTM D5587;  
 ASTM D5733<sup>1</sup> (withdrawn 2008, no replacement);  
 FLTM BN 150-02;  
 GM 9149P;  
 GMW3326;  
 ISO 13937-2

Tuft Lock

LP-463KB-22-01

Wrinkling

GM 9897P1 (05/11 inactive, replaced by GMW14757);  
 GMW14757

**Variable Surface Heat Exposure**

GM 9310P;  
 GMW15432

**Weathering**

Xenon

AATCC 16;  
 ASTM D4459;  
 FLTM BO 116-01;  
 GM 9125P<sup>1</sup> (05/13 inactive, no replacement);  
 GM 9327P<sup>1</sup> (01/11 replaced by SAE J1976);  
 NES M0135-2001-N;  
 SAE J1960<sup>1</sup> (cancelled 2008, replaced by SAE J2527);  
 SAE J1976;  
 SAE J2412;  
 SAE J2527

Fiber After Degradation

FLTM BN 117-03;  
 GM 9771P;  
 GMW3387

**Test:****Parameter/Range:****Test Method:****Environment Exposure**<sup>2</sup>:

Temperature  
 Humidity  
 Chamber Size

(-65 to 177) °C  
 20 to 95 %RH, up to 85 °C  
 (max.) to 26 ft. deep by 16 ft.  
 wide by 10 ft. high (full vehicles)

FLTM BQ 104-07

**Structure**<sup>2</sup>:

(Hoods, Decklids, Fenders,  
 Other Automotive Components)  
 Deflection and Set

± 3 in. displacement, 10 000 lbf

TS371-06-003

Dimensional Stability (including  
 the use of LVDTs, Load Cells  
 and Pressure Transducers)

TS371-06-003

<u>Test:</u>	<u>Parameter/Range:</u>	<u>Test Method:</u>
<u>Pneumatic Cycling Durability</u> <sup>2</sup> : Sunshade Assemblies Hood systems Rear compartment systems Consoles Ashtrays Glove Boxes Armrests Door Handles Trim Panels (interior and exterior) Latches Mirrors	Ambient or (-40 to 120) °C 24 in. displacement 225 lbf. load	TS371-06-003
<u>Servo Hydraulic Fatigue Test for Load or Displacement</u> <sup>2</sup> :	2.5 to 11 KIP Up to 6.0 inches travel 30 GPM pump 3000 psi pressure 10 Hz max. frequency	TS371-06-003
<u>Thermal Shock</u> <sup>2</sup> :	(-40 to 177) °C 8 ft <sup>3</sup> basket	GMW14124
<u>Vibration</u> <sup>2</sup> : Sine Random Classical Shock	3 in. displacement 20 to 2500 Hertz 11 000 pounds force Up to 80 g's Up to 11 milliseconds	SDS: EY-0128 (WDS 00.00ES-D11-18)
<u>Resistance</u> : Megohms		Fiat Auto 7.Z0250

<sup>1</sup> NOTE: This laboratory's scope contains withdrawn, inactive 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.

<sup>2</sup> This laboratory also uses customer supplied specifications and/or methods directly related to the testing technologies and parameters listed above.



## *Accredited Laboratory*

A2LA has accredited

### **RELIABLE ANALYSIS INC.**

*Madison Heights, 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 21<sup>st</sup> day of July 2015.

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

President & CEO  
For the Accreditation Council  
Certificate Number 0386.01  
Valid to August 31, 2017  
Revised July 28, 2017

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