



**MEETING THE TEST OF TIME, FOR OVER 25 YEARS.**

**That's what makes Trialon your most complete, single source test and engineering partner.**

**TRIALON<sup>®</sup>**  
*corporation*



## Trialon Dynamics Testing



### VIBRATION AND SHOCK TESTING

At Trialon, we understand that how well your component or assembly stands up to real world conditions involves a lot more than providing you with the right vibration testing equipment.

Trialon's Dynamics Laboratory offers over 6,000 square feet of test space and numerous electrodynamic shakers with capacities for testing everything from tiny circuit boards to large payload aerospace systems. Each individual system is equipped with multiple channel control systems for data acquisition and analyses.

Just as importantly, we have the specialized engineers and years of experience in testing and methodologies to suit your particular application. In addition to vibration analyses, we are one of very few test labs capable of providing you with full product validation ... all from a single source.

### TRIALON'S DYNAMICS TEST LABORATORIES ARE ISO / IEC 17025 ACCREDITED

# Trialon Dynamics Testing



## VIBRATION TEST METHODOLOGIES

### COMBINED TEMPERATURE AND VIBRATION TESTING CAPABILITIES FROM -73°C TO 177°C

Random, Sinusoidal, Sine on Random, Random on Random, Notching  
Up to 16 - channels of control / response monitoring  
5Hz to 3000Hz  
Up to 14,500 force pounds  
Up to 72 inches per second  
Up to 2.5-inch peak-to-peak displacement (continuous)

### COMBINED TEMPERATURE / HUMIDITY AND VIBRATION TESTING CAPABILITIES FROM -73°C TO 177°C AND UP TO 95% RELATIVE HUMIDITY

Random, Sinusoidal, Sine on Random, Random on Random, Notching  
Up to 16 - channels of control / response monitoring  
Notching  
5Hz to 2300Hz  
Up to 14,500 force pounds  
Up to 72 inches per second  
Up to 2.5-inch peak-to-peak displacement (continuous)

### MECHANICAL SHOCK AT TEMPERATURE / HUMIDITY CONDITIONS CAPABILITIES FROM -73°C TO 200°C AND 95% RELATIVE HUMIDITY

Up to 70 G's: both positive and negative directions  
Half-sine, Triangle, Saw Tooth and Trapezoidal Pulses

### MECHANICAL SHOCK AT AMBIENT CONDITIONS

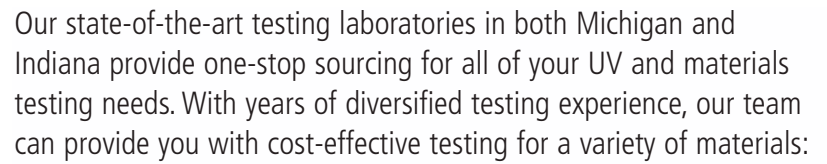
Up to 30,000 G's: both positive and negative directions  
Half-sine, Trapezoidal Pulses

### SUPPORT EQUIPMENT AND SERVICES

Custom Fixturing  
Resonance Search Capabilities  
Multiple channels for control / response monitoring  
Local pick-up and delivery



## Materials Testing



Our state-of-the-art testing laboratories in both Michigan and Indiana provide one-stop sourcing for all of your UV and materials testing needs. With years of diversified testing experience, our team can provide you with cost-effective testing for a variety of materials:

Plastics	Textiles	Adhesives
Elastomers	Rubbers	Metals
Foams	Tapes	Paint

And reliable, high-quality testing services is just part of the equation.

We're committed to customer service that goes above and beyond your expectations. Like free local pickup and delivery. And ensuring your test results are delivered on time, every time. No more waiting for critical test results. No more excuses for why your results are still not ready. Just a company-wide commitment to getting you the testing data you need, when you need it.

**TRIALON'S LABORATORIES ARE ISO / IEC 17025 ACCREDITED**

#### TEST FACILITY LOCATIONS

1815 TOUBY PIKE . KOKOMO, IN 46901 . TELEPHONE 765.459.0590 . FACSIMILE 765.459.0482

1477 WALLI STRASSE BLVD . BURTON, MI 48509 . TELEPHONE 800.847.8111 . FACSIMILE 810.742.8512

[WWW.TRIALON.COM](http://WWW.TRIALON.COM)



## Materials Testing

### MATERIALS TESTS

5 Finger Scratch	Grease Staining
90° & 180° Peel Abrasion Resistance	Hardness
Accelerated Light Resistance	Impact
Acid Exposure Resistance	Linear Wear and Abrasion
Adhesion Pull Test	Mandrel Bend
Alkila Exposure Resistance	Migration of Staining
Cold Flexibility	Odor
Chemical Resistance	Perspiration Resistance
Chromatic Transference	RCA Abrasion
Color	RCA Wear
Colorfastness to Crocking	Resistance to Cleaning Agents
Colorfastness to UV	Resistance to Marring
Compression Strength / Force	Resistance to Scuffing
Contamination	Resistance to Water and Soap Spotting
Corrosion Resistance	Resistance to Acid Spotting
Crock Mar	Perspiration Resistance
Crock Meter	Salt Fog
Cyclic Corrosion	Salt Spray
Dime Scrape	Scratch & Mar
Durability of Finish Coatings	Scratch Resistance
Finish Adhesion	Soiling and Cleanability
Flammability	Solderability
Flexibility	Sunscreen Resistance
Fluid / Chemical Resistance	Tabor Abrasion
Fluid Capability	Tape Adhesion
Fogging (Haze)	Tensile Strength / Force
Gasoline Resistance	Thumbnail Hardness
Gloss	Tumble Abrasion
Gloss Measurements	UV
Gray Scale Evaluation	Weatherometer

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## Trialon EMC Testing Capabilities



### EMC, EMI AND ESD TESTING

As one of North America's largest and most diversified product testing and engineering service providers, Trialon leads the way with innovative EMC, EMI and ESD testing solutions. We offer these services to customers in many markets throughout the world.

The fully AEMCLAP / AEMCLRP accredited Trialon EMC Test Lab in Burton, Michigan offers the latest test equipment and staff to meet today's changing requirements. Added multi-shift technical support also assures accelerated program turnarounds.

### TRIALON'S EMC TEST LABORATORIES ARE ISO / IEC 17025, AEMCLAP / AEMCLRP ACCREDITED

"The level of quality service that Trialon offers speaks wonders about the expertise of your staff and reliability of your test data. Thank you for always being available under any circumstance."

Jaive Peaks  
Validation Engineering  
Panasonic Automotive Systems  
Company of America

# Trialon EMC Testing Capabilities



## **EMC TESTING METHODOLOGIES**

Trialon's EMC Laboratory is capable of performing the latest test methods to GM, Ford and other Industry standards.

### **RADIATED EMISSIONS ALSE TEST METHODS**

### **RADIATED EMISSIONS MODE STIRRING TEST METHODS**

### **CONDUCTED EMISSIONS TEST METHODS**

### **RADIATED IMMUNITY MODE STIRRING TEST METHODS**

### **RADIATED IMMUNITY MODE TUNING TEST METHODS**

### **BCI TEST METHODS**

### **TRANSIENT IMMUNITY & TRANSIENT EMISSIONS TEST METHODS**

### **ESD IMMUNITY TEST METHODS**

### **IMMUNITY TO MAGNETIC FIELDS TEST METHODS**

### **SUPPLY VOLTAGE VARIATION TEST METHODS**

## **SUPPORT EQUIPMENT**

Fiber Optic Systems for Analog and Digital I/O Monitoring  
Fiber Optic Systems for Communications  
Fiber Optic Camera Systems for Visual Monitoring  
Fiber Optic Systems for Audio Monitoring  
Stripchart Recorder



## Trialon Environmental and Mechanical Simulation Capabilities

### ENVIRONMENTAL AND MECHANICAL SIMULATION CAPABILITIES

The pressures on manufacturers have never been greater. Develop higher quality products that outperform the competition. Engineer them meticulously. And get them to market ... yesterday.

Fortunately, at Trialon, one of the largest product testing and engineering service companies in North America, help is on the way. And it's nowhere more impressively evident than at Trialon's Environmental and Mechanical Simulation Capabilities.

Here, in one facility, leading global manufacturers from automotive to aerospace, military to consumer goods, have access to a complete menu of environmental, mechanical, material and electrical testing methodologies. Plus, engineering support well versed in your particular product criteria. Quickly! Precisely! Cost-effectively!

One-stop validation. Another way Trialon is continuing to help you meet the test.

### TRIALON'S ENVIRONMENTAL AND MECHANICAL SIMULATION CAPABILITIES ARE ISO / IEC 17025 ACCREDITED

# Trialon Environmental and Mechanical Simulation Capabilities



## TESTING METHODOLOGIES

### ENVIRONMENTAL SIMULATION CAPABILITIES FROM -60°C TO 340°C AND UP TO 100% RELATIVE HUMIDITY

- Altitude
- Autoclave
- Car Wash Simulation
- Cyclic Corrosion
- Drive-in Chambers
- Dust
- High Temperature
- Humidity – Constant or Cyclic
- Immersion
- Key Life
- Liquid Bath
- Liquid-to-Liquid Thermal Shock
- Low Temperature
- Ovens
- Salt Fog
- Salt Spray
- Temperature – Constant or Cyclic
- Thermal Couple Analysis
- Thermal Shock
- Walk-in Chambers

### MECHANICAL AND DURABILITY

- Button Durability
- Crush
- Disengage Force
- Engage Force
- Handling Drop
- Knob Torque
- Label Peel
- Lead Bend
- Package Drop
- Structural Durability
- Switch Rotation Durability
- Tensile

### ELECTRICAL TESTING

- Battery Voltage Dropout
- Contact Resistance
- Current Cycling
- Dielectric Strength
- Ignition Switching
- Isolation Resistance
- Jump Start
- Open Circuit
- Reverse Polarity
- Short Circuit Endurance
- Short to Battery
- Short to Ground
- Super Imposed Alternating Voltage
- Voltage Reset Behavior

### SUPPORT EQUIPMENT AND SERVICES

- Custom Durability Simulation
- Custom Fixturing
- Custom Software Control
- Data Loggers
- Load Board Build Up
- Local Pick-up and Delivery
- Specialized Test Controllers



# Professional Maintenance and Calibration Services



Trialon Corporation provides a wide range of routine/non-routine preventative maintenance, repair and calibration services. With over 60 years of combined experience, our EPA Certified Technicians can lower your overall costs and equipment downtime with fast, effective and friendly service.

## INSTALLATION, CALIBRATION AND SERVICE SUPPORT

Calibration on Environmental Chambers, Controllers, Digital Displays and Limit Controllers

24/7 Service and Support

Environmental Chambers from a Small Oven to a Full-Vehicle Drive-in Chillers and Process Water Systems

Vibration and Mechanical Shock Equipment

Controller, Chart Recorder and Product Saver Retrofits

Our Fleet Offers Midwest Territory Coverage

- Fully Insured
- Short or Long Term Service Contracts Available

**For details call Toll Free 1-800-847-8111**

Mark Whalen, ext. 7932 or John Krug, ext. 7919

**ISO/IEC 17025 CERTIFIED  
FOR CALIBRATION SERVICES**





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**ISO/IEC 17025 CERTIFIED  
FOR CALIBRATION SERVICES**





**WIDE-RANGE OF SERVICES. VALIDATION SUPPORT.  
ON TIME. EVERY TIME.**

In a business environment where timing and cost, consistency and reliability are so critical to staying competitive, it's no wonder more and more global manufacturers are choosing one source for their product engineering and testing services.

**THAT SOURCE IS TRIALON.**

Since 1982, Trialon Corporation, headquartered in Burton, Michigan, just north of Detroit, has quickly become the preferred test-engineering provider for leading OEMs and suppliers in automotive, aerospace, consumer products, general industry, medical products, military, telecommunications, and industrial / agricultural.

**FULL RANGE, FULL SUPPORT.**

Environmental. Mechanical. Electrical. EMC. Vibration. Each of Trialon's six state-of-the-art testing labs, strategically located near major U.S. manufacturing corridors, is well staffed, equipped and accredited to offer a comprehensive gamut of tests. These include tests few other labs in the world are certified to perform—everything from full-vehicle drive-in chambers for extreme thermal and humidity testing to electrodynamic vibration systems, which simulates real-world road vibration conditions.

This makes Trialon one of very few testing services capable of providing you with full product validation from a single source.

## EXPERIENCE AS DIVERSE AS YOUR APPLICATIONS.

Perhaps what sets Trialon apart most from other testing services are Trialon's experienced employees. Trialon engineers and technicians rank among the most highly technically talented and experienced in the industry. Many have been with the company for more than 20 years. What's more, they come from a diverse array of industry backgrounds, including specialists who can apply their knowledge to specific part criteria.

## IT'S A TRADITION OF EXCELLENCE IN ACTION.

You can see it on the front line: engineers and managers involved in product tests, communicating directly with customers to address questions and concerns.

You can see it in Trialon's all-out response to customers' late product changes and accelerated testing schedules, to guarantee on-time deliveries.

From top management down, it's a shared commitment at Trialon to do whatever it takes to assure your total satisfaction. On time. Every time.

## PUT IT TO THE TEST.

For more information, contact us toll-free at 1.800.847.8111. Or visit us online at [www.trialon.com](http://www.trialon.com).



"Harman/Becker Automotive Systems has been using Trialon as an outside testing lab for three years. Over the past three years, Trialon has been an exceptional company to conduct business with and we greatly value the strong relationship we have been able to build with them.

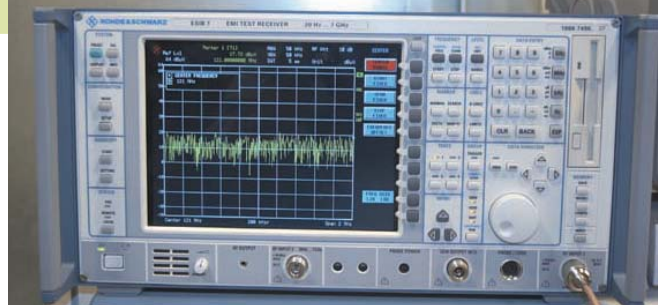
"As the Manager of Harman/Becker's Test Engineering department, I must ensure that our tests are completed in a timely and ethical manner. Trialon is very prompt with test schedules, and they are always prepared for testing by the time our samples arrive at their lab. Trialon has also demonstrated to me that they continually strive to maintain the integrity of their testing labs and their test results. I am confident that Trialon is both fair and honest in their testing. The employees of Trialon are always very professional in their demeanor, and they approach their work with a positive attitude. We have yet to present them with a challenge that they were unable to meet.

"I have and will continue to recommend Trialon with my highest regards."

Terry Brummett  
Manager, Test Engineering  
Harman/Becker Automotive Systems



With over 100,000 square feet of combined testing floor space, Trialon also offers customers surprising flexibility and efficiencies. These include doing single product to complex multi-system analysis and testing everything from small integrated circuit boards to huge space telescopes.



"Axsys was very pleased with Trialon's performance in testing its VIIRS telescope assembly. I would like to thank Trialon for the dedication and professionalism extended during testing of our space satellite imaging telescope assembly. The timely completion of the vibration test program, including unforeseen tooling modifications, could not have been accomplished without the outstanding commitment of your employees."

Gregg Walker  
Project Engineering  
Axsys Technologies, Inc.

### **MORE COMPREHENSIVE ENGINEERING SUPPORT.**

Far more than just a testing resource, Trialon also provides customers with a full range of engineering support services. Examples include mechanical fixturing, design and fabrication, custom-designed testing equipment and load board build up.

And few can match Trialon's facilities management support. For those requiring it, Trialon is ready and able to build, equip, staff and manage completely dedicated testing facilities. At their site. Or yours. Whatever it takes.





#### **CORPORATE HEADQUARTERS**

1477 WALLI STRASSE DRIVE  
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1.800.847.8111  
FAX: 1.810.742.8512

#### **TEST FACILITIES**

RELIABILITY TECHNICAL CENTER  
1815 TOUBY PIKE  
KOKOMO, IN 46901  
1.765.459.0590  
FAX: 1.765.459.0482

MICHIGAN TEST ENGINEERING CENTER  
1489 WALLI STRASSE DRIVE  
BURTON, IN 48509

EMC VIBRATION & ENVIRONMENTAL LABORATORY  
1477 WALLI STRASSE DRIVE  
BURTON, MI 48509  
1.810.742.8500  
FAX: 1.810.341.7915

#### **CERTIFICATIONS / APPROVALS**

**ISO / IEC 17025, AEMCLAP / AEMCLRP**