



# MATERIALS TESTING

Element Kitchener is an internationally accredited, CGP approved, well-rounded materials testing laboratory servicing the automotive, military, aerospace and consumer goods industries. The core of testing services offered center on the properties and durability of interior and exterior automotive, military, and consumer goods, parts and components. The facility is ideally located in the Tri City Area of Ontario and only 60 miles west of Toronto.

With a focus on Service and Quality Excellence, the team in Kitchener has defined themselves as a cost-effective extension of their customers' product development and quality assurance teams. They accomplish this by providing technical expertise and capabilities in the areas of Materials, Environmental, Vibration, Durability, and Reliability testing.

## ELEMENT KITCHENER MILITARY AND AEROSPACE TESTING

- Altitude
- Explosive Atmosphere
- Fluids Susceptibility
- Icing/Freezing Rain
- Leak Testing
- Linear/Constant Acceleration
- PIND
- Rapid Decompression
- Sand and Dust
- Solar Radiation
- Waterproofness/Rain Exposure
- Vibration and Shock
- Wind driven rain

## ELEMENT KITCHENER ENVIRONMENTAL TESTING

### AUTOMOTIVE TESTING

- Applied Pressure
- Applied Vacuum
- Data Acquisition
- Dimensional Stability
- Environmental Durability
- Fixture Design
- Force Vs Displacement
- Life Cycle
- Material Stress
- Mechanical Durability
- Proof Loading
- Step Stress
- Thermal Shock
- Vibration and Shock

### CORROSION TESTING

- Accelerated Corrosion
- Acidic Atmosphere
- CASS
- Cyclic Corrosion
- Filiform Corrosion
- Salt Spray
- Scab Corrosion

### SIMULATED ENVIRONMENTS

- Altitude
- Cyclic Corrosion
- Environmental Cycling
- Fogging
- Humidity
- Oven Aging
- Ozone
- QUV Exposure
- Salt Spray
- Sunlamp Exposure
- Thermal Shock
- Weather-o-meter

# DELIVERING INNOVATIVE PRODUCT TESTING AND CERTIFICATION SOLUTIONS

## INGRESS PROTECTION

- IP1, IP2, IP3, IP4, IP4K, IP5, IP6, IP7, IP8, IP9K
- IP5K, IP6X, IP6K

## PHYSICAL, MECHANICAL, SURFACE PROPERTY TESTING

- AATCC Gray Scale Evaluations
- Abrasion
- Car Wash
- Chemical Resistance
- Clean-ability
- Coating Thickness
- Color Evaluation
- Crocking
- Cure Test
- Five Finger Scratch
- Flexibility
- Gardner Impact
- Gravel-o-meter
- High Pressure Cleaning
- Hydrogen Sulfide Exposure
- Nissan Scratch
- Odor Testing
- Oil/Gas Immersion
- Paint Adhesion
- Thermal-shock
- Paint Film Permeability
- Pencil Hardness
- Perspiration
- Scuff and Mar
- Solvent and Detergent Resistance
- Specular Gloss
- Spot Test Acid, Water And Soap
- Stone Hammer
- Surface Roughness
- Taber Abrasion
- Thumbnail Hardness
- Water Immersion
- Water Jet

## DURABILITY AND FATIGUE

- Combined Durability & Environmental
- Component Evaluation
- Experimental Stress Analysis
- Flammability, FMVSS302
- Flow Measurement
- Highly Accelerated Life Test (HALT)
- Life Cycle Endurance
- Load Vs Deflection
- Mechanical Durability
- Pressure Cycling / Environmental Fatigue
- Servo Hydraulic Fatigue
- Structural Testing
- Vehicle Seat Cycle Testing

## ELEMENT KITCHENER DYNAMICS TESTING

- Combined Vibration and Environmental
- Classic Shock (Half-Sine, Sawtooth)
- HALT/HASS
- Linear Acceleration (Centrifuge)
- Random
- Random-on-Random
- Sine Dwell
- Sine-on-Random
- Sine Sweep
- Sound Testing
- SRS Shock

## ELEMENT KITCHENER CHEMICAL AND FAILURE ANALYSIS TESTING

- Contamination Analysis
- Failure Analysis
- Fourier Transform Infrared
- GC/MS With Gerstel TDS
- GC/MS With Headspace
- HPLC
- Microscopic Evaluation
- Off-Gas Analysis
- VOC Testing
- Volumetric Analysis
- SEM/EDS
- » Energy Dispersive Spectrometer
- » Fractography
- » High Magnification Imaging
- » Identification of Contaminants
- » Measurement and Distribution
- » Semi Quantitative Chemical Analysis
- » Verification of Coating Types
- Thermal Analysis
- » Compositional Analysis
- » Crystallinity
- » Cure
- » DSC - Differential Scanning Calorimetry
- » Melt Flow Indexer
- » Melt Point
- » Oxidative Induction Time
- » Temp
- » TGA
- » Thermal Stability

## ELEMENT KITCHENER MECHANICAL TESTING

- Adhesion of Painted and Metallic Coating
- Breaking Strength of Plastics and Metals
- Brittleness
- Coating Weight
- Compressive Strength of Foam, Plastics and Metals
- Density and Specific Gravity
- Flexural Bending (3 Point) Modulus
- Hardness, Rockwell, Knoop/Vickers
- Heat Treat Verification
- Impact Testing
- IZOD
- Load Testing of Components/Assemblies
- Peel Testing
- Shear Strength
- Tensile Properties
- Torque
- Weld Quality/Strength
- Welding and Brazing Analysis