Mechanical Testing, Materials Analysis, and Laboratory Services

Providing rapid turnaround for a wide range of materials testing and laboratory services.

For more than 35 years, Concurrent Technologies Corporation (CTC) has provided comprehensive testing services, specializing in mechanical testing, metallurgical analysis, corrosion testing, and coatings and physical properties testing. CTC's laboratory achieved accreditation in accordance with the recognized International Standard ISO/IEC 17025:2017. This prestigious accreditation by Perry Johnson Laboratory Accreditation, Inc., demonstrates the laboratory's technical competence for specified mechanical testing on a range of metals. (The scope of the accreditation is available on our Quality Commitment webpage.)

CTC's skilled team members deliver a wide range of services, from individual tests to full-scale programs, serving both government and commercial clients. Our laboratory staff has experience developing and executing in-house test methods customized to meet client needs and requirements. Additional testing methods and standards not listed can be investigated upon request.

What We Can Do For You

- Destructive (Mechanical) Testing
- Metallurgical Analysis
- Corrosion Testing
- Material Compatibility
- Wet Chemistry Chemical Analysis
- Coatings and Physical Properties Testing

CTC's corrosion testing and evaluations (including the ASTM B117 Salt Fog Testing shown) can be tailored to specific client requirements.

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Mechanical Testing, Materials Analysis, and Laboratory Services

Destructive (Mechanical) Testing

- Bearing Strength Testing – ASTM E238
- Bend and Flexure Testing – ASTM E290
- Compression Testing – ASTM B312, B331, B528, E9, E209
- Custom Load/Cyclic/ Displacement testing according to customer needs
- Dynamic Tear Testing – ASTM E604, ASTM E208
  - 20,000 ft-lbs capability at full load and drop height
  - Test temperatures down to -452°F
- Ductility and Formability Testing
- Impact Testing (Charpy) – ASTM E23

CTC uses an Instron Drop Tower with 20,000 ft-lbs capability at full load and drop height. Specimens can be tested down to -452°F.

- In-plane Shear – ASTM D3518
- Precision Modulus and Poisson's Ratio – ASTM E111, E132
- Rotating Bending Fatigue Testing
- Tension (Tensile) Testing – ASTM E8, D412, E21
  - High Temperature (3100°F) Vacuum
  - Cryogenic Testing
  - Strain Rates of up to approximately 20 in/in/sec

Metallurgical Analysis

- Failure Analysis
- Hardness Testing (Brinell) – ASTM E10
- Hardness Testing (Rockwell) – ASTM E18
- Image Analysis
- Microhardness Testing (Knoop & Vickers) – ASTM E384
- Optical Microscopy with 3D Imaging
- Sample Preparation

Corrosion Testing

- Accelerated Weathering – ASTM G155
- Alternate Immersion – ASTM G44
- ASSET Testing – ASTM G66
- Condensation – ASTM D4585
- Humidity – ASTM D1748, D1735
- Modified Salt Fog Testing – ASTM G85, Annex 1, 2, 3, 5
- NAMLT Testing – ASTM G67
- Salt Fog Testing – ASTM B117
- Sandwich Corrosion – ASTM F1110
- Stress Cracking Corrosion – ASTM G64, G58, G47, G49
- Total Immersion Corrosion – ASTM F483
- Ultraviolet (A or B) Condensation – ASTM D4587

A technician is shown operating an MTS-2 system (55 kip load capacity, -450°F to 2300°F testing environment capabilities).

Materials Compatibility

- Various substrates and methods (previous studies include alternative fuels, deicers, cleaning solutions, etc.)
- Programs developed in-house to meet customer needs

Wet Chemistry Chemical Analysis

- Acidity (Free and Total) – EPA 305.1
- Alkalinity (Free and Total) – EPA 310.1, SM 2320B
- Chloride – EPA 325.3, SM 4500-Cl-
- Chlorine (Free and Total) – EPA 330.5, SM 4500-Cl-
- Color – EPA 110.2, SM 2120B
- Conductivity – EPA 120.1
- Flash Point – ASTM D93
- Heat of Combustion, ASTM D240
- pH – EPA 150.1
- Solids (Total, Suspended, Dissolved, Settleable) – EPA 160
- Temperature – EPA 170.1, SM 2550B
- Turbidity – EPA 180.1

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Allison Wiesheier, CTC Laboratory Manager, demonstrates testing capabilities to visitors on a tour of our Johnstown, PA, facilities.

- Viscosity – ASTM D7042
- Water Content (Karl Fischer) – ASTM E1064

Coatings and Physical Properties Testing

- Abrasion (Taber) – ASTM D4060, FED STD 141D
- Adhesion
  - Bend to Break – ASTM B571
  - Knife – ASTM D6677
  - Knife-chisel – ASTM B571
  - Mandrel – ASTM B571
  - Pull-off – ASTM D4541, IV & V
  - Tape test – ASTM D3359
- Density/Specific Gravity – ASTM D792, ISO 3369
- Density (Gas Pycnometer) – ASTM B923
- Fluid Immersion Studies
- Gloss – ASTM D523
- Hardness
  - Durometer – ASTM D2240
  - Pencil – ASTM D3363
- Impact/Reverse – ASTM D2794
- MEK Rub – ASTM D4752
- Surface Profile/Roughness – ASTM D4417
- Thickness (Nondestructive) – ASTM B244, B499, D7091

A technician is shown performing tension (tensile) according to ASTM E8 at room temperature.

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Concurrent Technologies Corporation

Concurrent Technologies Corporation (CTC) is an independent, nonprofit, applied scientific research and development professional services organization. CTC collaborates with its technology transition affiliate, Enterprise Ventures Corporation, to leverage research, development, test and evaluation work to provide transformative, full life-cycle solutions. To best serve our clients' needs, we offer the complete ability to fully design, develop, test, prototype, and build. We deliver robust, technical, and innovative solutions that safeguard our national security, retain U.S. technological advantage, and ensure the primacy of American manufacturing.

CTC is a leader in quality and environmental management systems. Visit our Quality Commitment webpage for more information.

www.ctc.com

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