

WHEN YOU NEED THE BEST RESEARCH & MATERIALS TESTING LAB



Analytical Research and Testing Laboratories (ARTL),

a materials testing lab offers a wide range of analytical services. We have been located just south of Phoenix Sky Harbor International Airport for over 5 years.

We have over 20 years of experience with materials testing and failure analysis in the aerospace, construction, automotive, military and semiconductor industries. ARTL also offers materials consultation, reverse engineering and expert witness services. ARTL strives to exceed customer expectations!

Please do not hesitate to contact **ARTL, 602-374-3770** or kbailey@artl-llc.com, if you have any questions. We are looking forward to growing a business relationship with you!

ARTL's principal materials engineer/owner, Keith Bailey, has a Bachelor of Science and Master of Science in Material Sciences and Engineering from Arizona State University. Mr. Bailey has over 20 years of experience and opened ARTL over 5 years ago. ARTL offers materials testing services to several Phoenix based companies but also has clients across the United States. ARTL's objective is to provide material testing at a competitive price and in a timely fashion exceeding industry standards.

Materials Reverse Engineering, First Article Evaluation, Quality Control, Weld Certification, Failure Analysis...

- Base Alloy Analysis
- Rockwell/Superficial Hardness Evaluation
- Knoop/Vickers Micro Hardness Evaluation
- Coating Analysis
- Fractography Analysis
- Effective Case Depth Evaluation
- Weld Certification
- Casting Qualification
- Casting Analysis
 - Macro Examination
 - Micro Examination
- FTIR Analysis and more...

We are AS9100C/ISO9001:2008 Certified, ISO 10725 and NADCAP compliant.

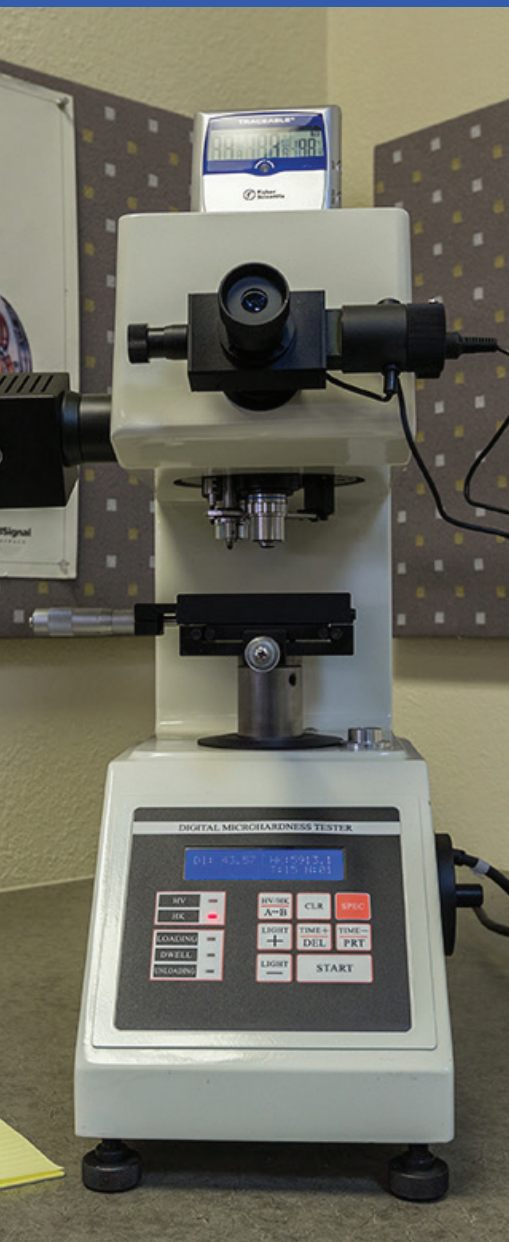
 **ARTL** Analytical Research
and Testing Laboratories

www.artl-llc.com

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CAPABILITIES



For a quote, please complete the work sheet located on our website at www.artl-llc.com/work-order-request or download a PDF version found online, complete and email it to kbailey@artl-llc.com.

MACRO DIGITAL IMAGING

- 1X – 30X magnification
- Documentation of part features such as coating extent, gear profiles
- Fracture surface features
- Grain size
- General documentation at relatively low magnification

STEREO MICROSCOPE WITH DIGITAL IMAGING

- 5X – 45X magnification
- Coating extent
- Surface profiles for gears and other features

ANALYTICAL BALANCE

- 400 gram max, +/-0.0001 gram
- Density analysis
- Specific gravity

PRECISION DIAMOND SAW

- Precision cutting hard and brittle materials such as ceramics

WET ABRASIVE CUT OFF SAW SECTIONING

- Time efficient sectioning while minimizing heat induced alteration

MICRO HARDNESS TESTING HK AND HV

- Coating hardness evaluation
- Case depth analysis
- Core hardness

INVERTED METALLOGRAPH WITH DIGITAL IMAGING

- 50X – 1000X magnification
- Coating thickness/extent analysis: analysis of plating, thermal sprays and a variety of other surface processes
- Microstructural evaluation/analysis
- Grain size analysis
- Surface analysis/extent for recast layers, intergranular attack (IGA), metal mold reaction, alloy depletion, entrapped grit at interfaces
- Diffusion and braze joint evaluation
- Internal casting defect analysis
- Sintered alloy examination

SEM/EDX

- Coating verification
- Elemental analysis of phases, entrapped material, corrosion product
- Gamma prime analysis
- 50X - 10,000X digital imaging with high depth of focus
- Fractography analysis

OES ANALYZER

- Base alloy identification/confirmation for industrial alloys (aluminum, copper, tool steel, titanium, cast iron, cobalt, nickel, stainless steels, low alloy steels alloys)

FTIR ANALYZER ATR METHOD

- Polymeric and adhesive material analysis

ROCKWELL/SUPERFICIAL HARDNESS

- Rockwell/superficial hardness evaluation for core and surfaces



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