LABORATORY SERVICES

With over 50 years of material testing experience, Cannon Muskegon is proud to offer our laboratory services, capabilities, and metallurgical expertise to the investment casting industry.

In order to emerge as a global leader in the production of premium cast alloy, we have developed and refined reliable and repeatable analytical techniques. We utilize these techniques daily to ensure our alloy meets expectations for use in the most intricate, performance-demanding applications in the world.

Our laboratory services provide analysis required to certify product conformance to specifications and overall quality, while process feedback through chemical analysis and metallographic characterization provide tools for process optimization and enhanced casting capability. Continual investment in state-of-the-art equipment and technology, coupled with our robust analytical techniques guarantee the most accurate, reproducible, and trusted analytical test results.

FOCUS

- Extensive experience in Fe-, Ni-, Co-base casting alloys
- Flexible test plans to meet your specific analytical needs
- Consistent testing eliminates lab-to-lab variation and provides feedback across manufacturing operations
- Expert analysis and robust calibration for product accuracy and repeatability
- Competitively priced solutions with expedite options

ACCREDITATIONS

Nadcap Administered by PRI ACCREDITED Materials Testing Labratories

ilac-MRA

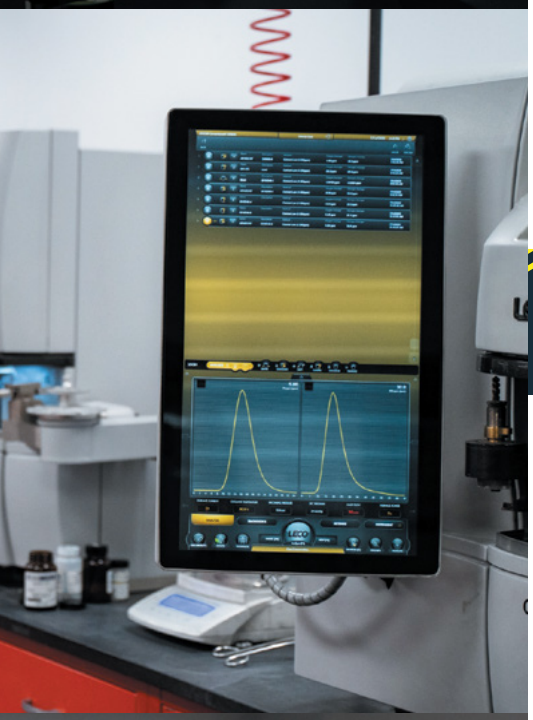
A2LA ACCREDITED CERTIFICATE #3124.01

OEM APPROVALS

Roll-Royce, GE, SAFRAN, Honeywell

CANNON-MUSKEGON CORPORATION

A PCC COMPANY



GDMS

Optimal for trace element requirements and process troubleshooting, featuring a high-resolution mass spectrometer for direct analysis of solid samples and semi-quantitative analyses

GLOW DISCHARGE MASS SPECTROMETRY (GDMS)

Equipment
Thermo Fisher Element GD Plus

Key Elements
Full survey tramp & trace elements (AMS2280 Class 2, GE P29TF19/ P29AG100, Safran DMR32)

Testing Level
ppm, ppb

Sample Size Requirements
5/8" (16 mm) diameter, flat section

CHEMISTRY ANALYSIS

Optimal for process monitoring, quality control, and process troubleshooting

ELEMENTAL
(CARBON/SULFUR & NITROGEN/ OXYGEN/HYDROGEN)

Equipment
LECO Instrumentation

Key Elements
C, S, N, O, H

Testing Level
ppm

Specification
ASTM E1019

X-RAY FLUORESCENCE (XRF)

Equipment
Panalytical 21 Element Simultaneous Spectrometer

Key Elements
Major elements (Al, Cb, Co, Cr, Cu, Fe, Hf, Mn, Mo, Ni, P, Re, Ru, Si, Ta, Ti, V, W, Zr, Se, Sn)

Features
Quick, consistent analysis with proper alloy standard

Sample Size Requirements
1 1/4" diameter flat section or 100g casting piece(s) to make argon arc test button (pieces must be from a single mold)

Specification
ASTM E1085/E322/E572/E2465

WET CHEMISTRY ANALYSIS

Optimal for process monitoring, quality control, process troubleshooting, and trace element analysis per AMS2280 Class 2, featuring quantitative multi-element analysis at trace level for flexibility and reliability

INDUCTIVELY COUPLED PLASMA MASS SPECTROSCOPY (ICP-MS)

Equipment
Perkin Elmer Instrumentation

Key Elements
Tramp & trace elements (Ag, B, Bi, Ca, Ce, Cd, Co, Cu, Fe, Ga, Ge, Hf, Hg, In, La, Mg, Mn, P, Pb, Pd, Pt, Re, Ru, Si, Sn, Sb, Tl, Ti, Th, U, V, Y, Zr)

Testing Level
ppm

Sample Size Requirements
150 g casting piece(s)

INDUCTIVELY COUPLED PLASMA OPTICAL EMISSION SPECTROSCOPY (ICP-OES)

Equipment
Perkin Elmer Instrumentation

Key Elements
Tramp & trace Elements (Ba, Ca, Co, Mg, Ta)

Testing Level
PPM (parts per million)

Specification
ASTM E2594

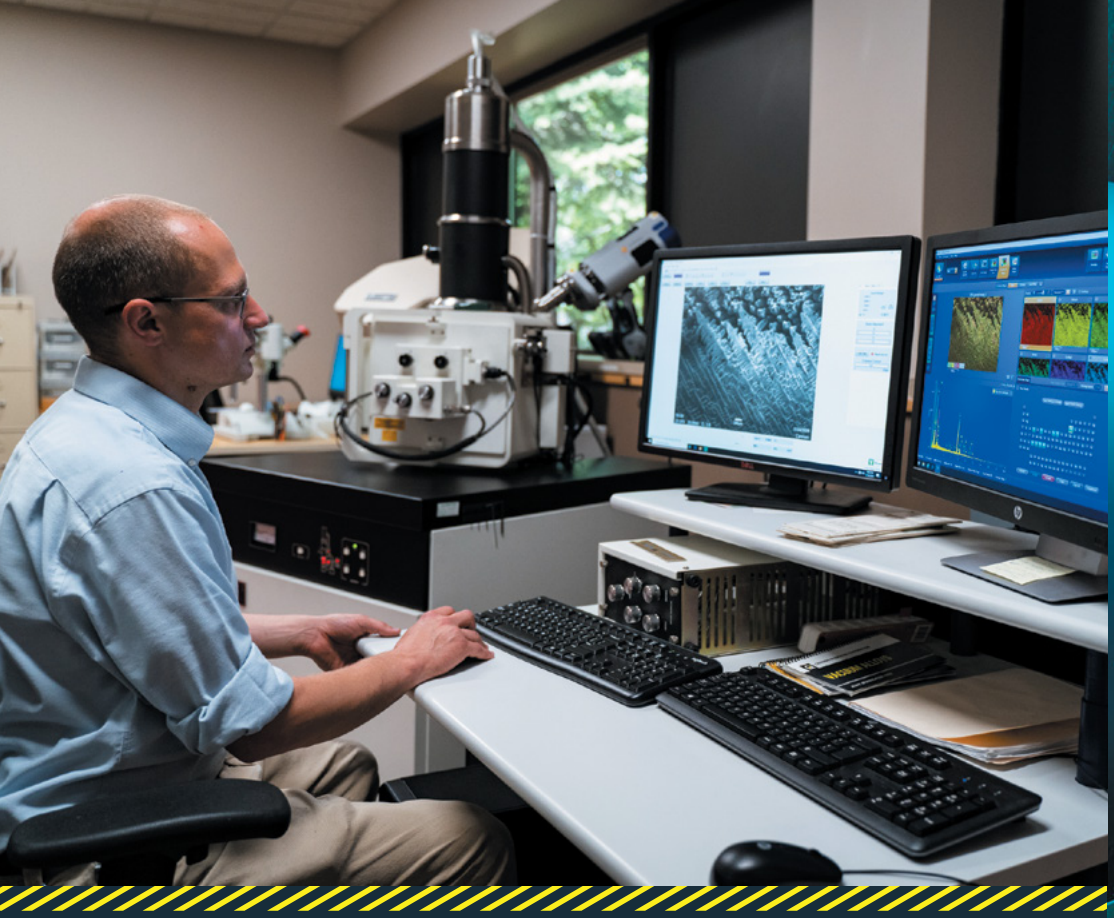
ATOMIC ABSORPTION SPECTROSCOPY (AA)

Equipment
Perkin Elmer Instrumentation

Key Elements
Tramp & trace Elements (Flame: K, Na; Graphite: Ag, As, Au, Bi, Cd, Ga, Ge, Hg, In, Pb, Pd, Pt, Sb, Se, Si, Sn, Te, Zn)

Testing Level
ppm

Specification
Flame: ASTM E1835;
Graphite: ASTM E1834



MATERIALS CHARACTERIZATION

SCANNING ELECTRON MICROSCOPE (SEM)

Equipment
Amray 1830 with Oxford EDS/WDS

Purpose
Optimal for microstructural characterization, failure analysis, and defect/inclusion analysis

Features
- Up to 10,000x magnification with 64 MP (8k x 8k) image resolution
- Backscatter and secondary electron collectors for metallographic inclusion inspection and identification
- WDS ensures confidence of any overlapping peaks, EDS ensures powerful and effective micro analysis
- Qualitative chemical characterization of surface features

OPTICAL METALLOGRAPHY

Purpose
Optimal for analyzing grain size, grain structure, failure analysis, and defect characterization

Features
Microstructural characterization 1x-1000x, polarized light microscopy

DIFFERENTIAL SCANNING CALORIMETRY (DSC)

Equipment
Mettler Toledo Thermogravimetric Analyzer

Features
Alloy solidus/liquidus temperature profiles

CONTACT US TODAY TO LEARN MORE

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