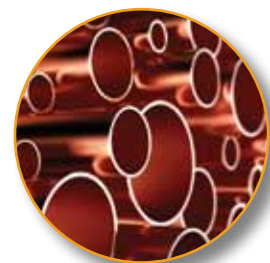


# *Prodigy DC Arc*

The Ultimate Solution for  
the Analysis of Trace  
Impurities in Copper



**TELEDYNE LEEMAN LABS**  
Everywhere you look™



Few other techniques can challenge the ease-of-use of a DC Arc for the direct analysis of trace elements in high purity copper.

Whether you work in a copper refinery that produces and sells thousands of tons of cathode grade copper or in a plant that manufactures copper rod or wire, look no further than the Prodigy DC Arc for your high purity copper analysis needs.

- Measurements of samples in their native form allow rapid decisions to be made during refining and milling processes
- Measurements are sensitive and accurate enough to reliably distinguish anode from cathode grade copper
- Superior detection limits allow impurities in copper to easily be quantified at and below the maximum allowable concentrations outlined by the London Metal Exchange (LME) for cathode grade copper
- An optional nitrogen-purged optical path allows for the determination of sulfur in copper at sub-ppm concentrations without adversely affecting the sensitivity of the other elements of interest

Element	Wavelength (nm)	Detection Limit (ppm)
Ag	338.289	0.02
As	193.759	0.06
Bi	306.772	0.016
Fe	248.327	0.09
Ni	305.082	0.2
Pb	283.307	0.015
S	180.731	0.6
Sb	206.833	0.4
Se	203.985	0.8
Sn	283.999	0.05
Te	238.576	0.2
Zn	481.053	0.04

**Prodigy Detection Limits in High Purity Cu**

## With the Prodigy DC Arc you are able to...

### Save Time, Money and Hassle

Solution based techniques such as AA, ICP and ICP-MS require that samples be in liquid form prior to analysis. The Prodigy DC Arc analyzes high purity copper in its native metallic form without the need for time-consuming digestion procedures which increase the risk of sample contamination during preparation, and can dilute analytes of interest to concentrations that become challenging to quantify.

### Achieve Superior Limits of Detection

Since copper samples can be analyzed without digestion and dilution prior to analysis, detection limits for most analytes are superior to those that could be achieved using other techniques. Detection limits for trace elements in copper on the Prodigy DC Arc are between 0.015 and 0.8 µg/g (ppm) in the native sample.

## Increase Productivity

The Prodigy DC Arc acquires the full emission spectrum in a single burn. This unique feature, coupled with minimum sample preparation, reduces the time of analysis, improves efficiency and therefore, productivity of the laboratory.

## Attain Lower Cost of Ownership

Unlike many of today's analytical instruments, there are no special lamps, glassware or sample cones to replace. There are no expensive vacuum components to fail or maintain, and you do not need advanced technical skills to operate it.

# Advanced Capabilities

The Prodigy DC Arc is a state-of-the-art spectrometer that offers many advantages when measuring high purity copper metal.

## DC Arc Stand

The Prodigy contains an arc stand that incorporates a v-grooved "jaw style" counter electrode holder that accommodates counter electrodes of varying outside diameter and length. The sample electrode holder can accommodate any electrode, including mushroom-style electrodes, and contains both a built-in Stallwood Jet and a stopgap to set the height of the sample electrode in a reproducible fashion. The features in both electrode holders facilitate rapid electrode changes between sample burns.



Prodigy DC Arc Stand

## Time Resolved Analysis

Time Resolved Analysis (TRA) mode allows the detector to measure wavelength intensities as a function of time and is an extremely useful tool during the method development phase of any DC Arc analysis. During an arc burn, elemental impurities in copper volatilize at varying rates and emit their characteristic wavelengths of light at different times during the arc burn. These emission profiles are captured during TRA analysis and allow the user to quickly and easily set appropriate integration periods (time gates) that maximize the signal to noise ratio for each analyte of interest.



TRA Scan of Ni in High Purity Cu

## Deep UV Analysis

The Prodigy allows the measurement of wavelengths below 190 nm for elements like sulfur and phosphorus during the same arc burn in which wavelengths above 190 nm are measured.

A purged optical path (POP) tube purges the air path from the arc to the optical entrance window of the spectrometer for the measurement of wavelengths in the low UV that would otherwise be absorbed. The gas flowing through the POP tube causes minimal disturbance to the arc and does not degrade analytical precision or sensitivity.



Close-up View of Purged Optical Path Tube

## More than Just a DC Arc

Beyond the initial purchase price lies the true cost of ownership, and that's where the DC Arc shines. Why? Because Teledyne Leeman Labs builds these instruments to last.

## After Sales Support

**Telephone Support:** Our technicians and support chemists can resolve most application, operation, maintenance, and troubleshooting questions over the phone. A toll free hot line staffed with specialists trained in emergency repair is available to assist you.

**Remote Diagnostics:** Remote diagnostics software provides our technicians and scientists with the ability to access an instrument via the internet. Specialist support is always at hand.

## Service Agreements

A variety of optional service agreements are available including:

**Full Maintenance:** A set rate comprehensive package that allows the user to budget for each instrument under the agreement.

**Limited Maintenance:** Allows the user to budget for costs associated with replacement parts and technical support. This agreement is designed for the user who performs their own maintenance.

**Preventative Maintenance:** Designed to keep your equipment in peak working condition and to note any items that may lead to future problems.

## You're in Good Company

Are you getting the impression that we stand solidly behind our instrumentation? You're right. Our confidence comes from knowing that we haven't cut corners in the design, maintenance or testing of our products. We build our instruments to the most exacting specifications. We build them to do the job, and to do it right. It's a reputation that we worked hard to earn, and that we work harder to maintain.

So what kind of companies and organizations rely on analytical instruments from Teledyne Leeman Labs? Our customers come from both the public and private sector. They are leaders in industry, government, and academia. Add to the list hundreds of cities, municipalities, and institutions of higher learning and you start to get a sense of the family of Teledyne Leeman Labs customers, and the impact that they have on our society.

We continue to invest heavily in research and development and look forward to providing our customers with additional products and technology advances in the years ahead.

ICP Spectrometers



Mercury Analyzers



DC Arc Spectrometers



Inorganic Standards



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