TECHNICAL BULLETIN TB-004

WHY PURITY TESTS EVERY HEAT

IN-HOUSE ALLOY VERIFICATION & QUALITY CONTROL

Every heat we produce is sampled and analyzed in-house to verify alloy chemistry before casting.

Why test every heat?

Chemical composition directly affects the electrochemical performance, mechanical properties, and service life of our alloys. Testing every heat ensures the alloy meets the specified requirements and provides consistent, reliable performance for your application.

How does testing improve performance?

Proper alloy chemistry ensures the correct electrochemical potential, current output, and consumption rate for the intended environment. This helps prevent premature failure, reduces the risk of non-conformance, and maximizes the service life of our products.

How do we take a sample?

We follow a controlled sample taking procedure to ensure the sample accurately represents the melt:

1. Melt must be at casting temperature with all metals in solution.
2. Melt to be stirred to prepare a homogenized alloy.
3. Sample ladle must be clean and preheated.
4. The first sample into the mold is to be discarded. Only the second sample will be submitted for analysis.
5. Sample must be identified by alloy and heat number with a black marker.

What do we test for?

Each heat is analyzed for the elements relevant to the alloy being produced. Our in-house ARUN PolySpek laboratory allows us to analyze a wide range of aluminum, zinc, tin, and lead-based alloys. Results are compared against the applicable specification or customer requirements before the heat is approved for production.

When do we take samples?

Representative samples are taken at the beginning of each heat, and after any additions to the melt, in accordance with our documented procedures. Each heat must be sampled and approved by the production manager before casting begins.

How are samples analyzed?

Prepared samples are analyzed in-house using our ARUN PolySpek laboratory spectrometer. The instrument uses optical emission spectroscopy (OES) to determine elemental composition. It is professionally calibrated annually, and results are reviewed by our quality team to ensure the heat meets the applicable specification or customer requirements.

The result: trusted quality

By testing every heat, we confirm that the alloy chemistry meets your requirements. This commitment to quality gives you confidence in the reliability and effectiveness of our products.

> **Consistent chemistry means consistent performance.**

ENGINEERING NOTE

Our ARUN PolySpek laboratory spectrometer is professionally calibrated annually. Combined with documented sampling and sample-preparation procedures, this helps us maintain reliable, repeatable alloy analysis from heat to heat.