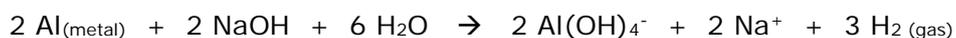


Application note nº 210110

Aluminium slags and castings

The AL-204 is a new compact automatic unit that undertakes the analysis of metallic aluminium contents by gasometry in less than 15 minutes, improving the repeatability and accuracy of the analysis according to the various national and international normative.

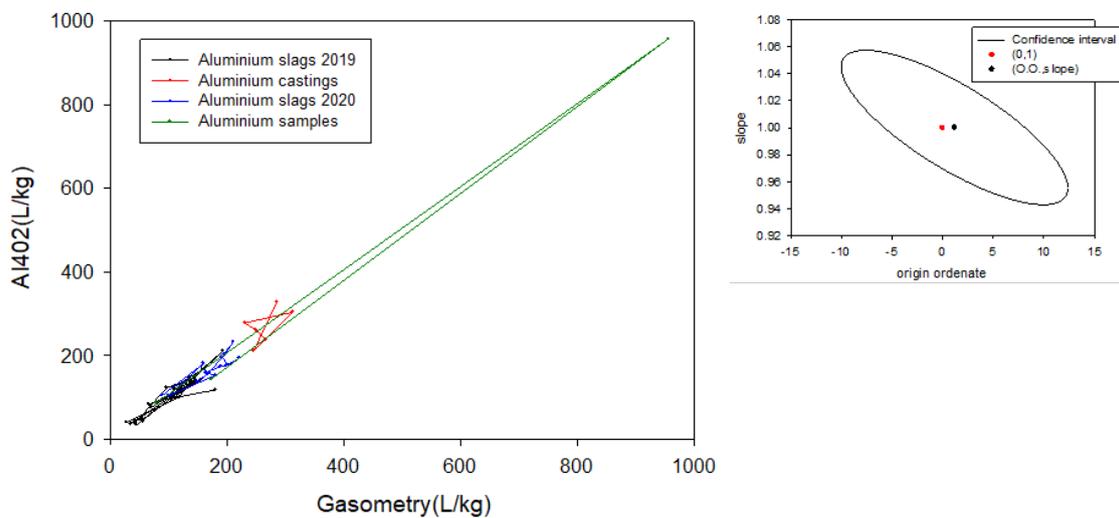
The analysis is made by monitoring in continuous the increase of pressure generated by the hydrogen produced in the reaction of the oxidation of the aluminium in basic medium, as per the following chemical reaction:



1. Once the sample has been weighed and placed in the crucible a magnetic bar is added, the analysis process is launched.
2. Automatically the crucible is sealed and pressure and temperature are checked and corrected previous the reactive addition.
3. Next reactive is added over the sample using an automatic peristaltic pump.
4. The aluminum oxidation reaction starts immediately. During a fixed time (10 - 60 min configurable by user), the pressure value inside the crucible is monitored, keeping the temperature constant.
5. At the end of the analysis time, the depressurization of the system occurs and the aluminum concentration value and the volume of gas generated are confirmed. The module is ready for the next analysis.

Aluminum recovery processes suppose a big technological challenge. Knowing the aluminum amount in the samples favors the optimization of the industrial process. The AL-204 analyzer not only provides accurate information on the aluminum concentration (% Al) in the sample, but also provides information on the amount of gas generated (hydrogen in L/kg) during the oxidation reaction of metallic aluminum. .

The following figure shows a comparative study of the analysis of 61 samples (3 different types of samples: slag, casting and reference samples) simultaneously using the AL-402 analyzer and a gasometry as the reference method.



The previous figure represents the amount of H₂ gas generated (L/kg) during the analysis with the AL-402 analyzer vs the reference gasometry method (L/kg). The joint confidence interval of the origin ordinate and the slope shows a total correlation of the results between both methods ($\alpha=0.05$).

This application note is based solely on the processing of the available sample material in the indicated amount. No legal claims shall be derived from this application note.
Subject to technical modification and errors.