

Air Reactivity Anode

RDC-151

Electrodes Lining Lab

General Description

During electrolysis, air can be present at the anode top. A burning reaction can occur between the air and the anode, which increases the net anode consumption and potentially deteriorates the quality of the butts for the next anode generation. If a selective attack of the binder matrix occurs, carbon particles get excavated from the anode and end up in the bath (carbon dusting). It leads to a higher bath resistivity and temperature, so the current efficiency may be decreased. It may also trigger spikes formation. It is important to produce anodes with a minimum CO₂ reactivity to avoid such performance problems.

The measurement is done with the RDC-151 apparatus, where a core sample with a diameter of 50 mm and a length of 60 mm is placed in a furnace at 550°C under air atmosphere and cooled down to 400°C with a rate of 15°C/h. After cooling, the sample is weighed and tumbled with steel balls using the RDC-181 apparatus to remove any loosely bound particles. The final weight of the residual body is then measured. The following three results are reported:

- Air reactivity residue: corresponds to the residual sample.
- Air reactivity dust: corresponds to the removed grains.
- Air reactivity loss: corresp. to the loss due to air burning.

RDC-151 is available with 1 or 3 furnaces, in which one sample per furnace can be placed at the same time. During the sample preparation, a hole must be drilled in the center of the sample's surface area with the RDC-180 Bench Drilling Machine.

Technical Information

Standard Method	ISO 12989-1
Property	Residue [%] Loss [%] Dust [%]
Sample	Core Ø 50 x 60 mm
Process Time	~ 12 hours
Installation	Floor standing under fume hood
Dimensions (LxWxH)	160 x 60 x 200 cm
Weight	377 kg
Electrical Property	400 V 3/N/PE, 50 Hz 3.3 kW, 8.3 A
Fluid Property	Air : 600 l/h, 3-7 bar
Certified Reference Material	RDC 1151
Database Connection	No



Additional Recommended Equipment

Drilling Machine (RDC-157 or RDC-179)
Saw (RDC-140 or RDC-148)
Bench Drilling Machine (RDC-180)
Tumbling Apparatus (RDC-181)
Drying oven (min. temperature 180°C)
Weighing scale with an accuracy of 0.1 g

Certified Reference Material



RDC 1151

Weight per unit	N/A
Number of tests	6

Video

