

RDC-151

Name AIR REACTIVITY

Material type
**GRANULAR
PITCH
ELECTRODES
LINING**

Utilization
**R&D
IN-PLANT
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 of Ø 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

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| Standard Method: | ISO 12989-1 |
| Property: | |
| Residue | [%] |
| Loss | [%] |
| Dust | [%] |
| Sample: | Core Ø50 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: | 400V 3/N/PE, 50 Hz 3.3 kW, 8.3 A |
| Fluid Property: | Air, 600 l/h, 3-7 bar |
| Certified Reference Standard: | 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

RDC 1151

Technical information

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| Weight per unit: | N/A |
| Number of tests: | 6 |

