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 CO_2 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

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

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