

RDC-192

Name SODIUM VAPOUR TEST

Material type
**GRANULAR
PITCH
ELECTRODES
LINING**

Utilization
**R&D
IN-PLANT
LAB**

General description
A good mechanical strength of the carbon lining materials in the aluminium electrolysis cell is important to avoid thermal shock issues as well as breakage due to collector bar geometry, bath crystallization or metal penetration. For this purpose, the compressive strength can be measured with the RDC-144 equipment. However, it is also important to evaluate the impact of sodium penetration on the mechanical strength to ensure a good level even when the materials are in operations. The measurement is conducted with the RDC-192 apparatus, where a sample with 50 mm diameter and 50 mm height is exposed to sodium vapors at a temperature of 800 °C for a given period of time. After cooling down, the volumetric change of the sample can be recorded and the compressive strength can be measured with the RDC-144 equipment. The sodium vapour resistance corresponds to the ratio of the compressive strength after versus the level before the test, i.e. without sodium vapour exposure.

Technical information

Property:	Sodium Vapour Resistance	[%]
Sample:	Core Ø50 x 50 mm	
Process Time:	~ 24 hours	
Installation:	Floor standing under fume hood	
Dimensions (LxWxH):	75 x 60 x 170 cm	
Weight:	180 kg	
Electrical Property:	230V 1/N/PE, 50 Hz 2.2 kW, 10 A	
Fluid Property:	Argon, 100 l/h, 10 bar	
Database Connection:	No	
Consumable:	Metallic sodium	

Additional Recommended Equipment:

Drilling machine (RDC-157 or RDC-179)
Saw (RDC-140 or RDC-148)
Compressive Strength & Young's Modulus (RDC-144)
Drying oven (min. temperature 180 °C)
Weighing scale with an accuracy of 0.01 g

