RDC-144

Name

COMPRESSIVE STRENGTH AND YOUNG'S MODULUS

Material type

GRANULAR
PITCH
ELECTRODES
LINING

Utilization

R&D
IN-PLANT
LAB

General description

The measurement of the mechanical properties of electrodes, such as the compressive strength and Young's modulus (also called static elasticity modulus), is vital to quantify the mechanical behavior and the thermal shock resistance of the electrodes for two main reasons:

- A high Young's modulus, typically combined with high compressive strength, is an indication of a brittle material that is very sensitive to temperature differences.
- The ratio between the compressive strength and the flexural strength (RDC-187 apparatus) gives an indication of the presence of macrocracks.

The measurement is conducted with the RDC-144 apparatus, where the uniaxial compressive load on a core sample with a diameter of 50 mm and a height of 50 mm is increased until the sample breaks. The maximal load applied onto the sample will be divided by its surface area to calculate its compressive strength in MPa.

At the same time, the change in length is recorded and the Young's modulus, corresponding to the slope of the stress/strain graph, is calculated and expressed in GPa.

Technical information

Standard Method:	ISO 18515
Property:	
Compressive Strength	[MPa]
Static Elasticity Modulus	[GPa]
Sample:	Core Ø50 x 50 mm
Process Time:	~ 2 minutes
Installation:	Workbench
Dimensions (LxWxH):	70 x 62 x 67 cm
Weight:	170 kg
Electrical Property:	230 V 1/N/PE, 50 Hz 0.5 kW, 2.2 A
Database Connection:	Yes

Additional Recommended Equipment:

Drilling machine (RDC–157 or RDC–179)
Saw (RDC–140 or RDC–148)
Drying oven (min. temperature 180°C)