

Thermal Expansion

RDC-158

Electrodes

Lining

Lab

General Description

The coefficient of thermal expansion of an electrode is an important parameter to predict its thermal shock resistance. When an electrode at ambient temperature is put in operation at a high temperature, a heat wave will penetrate the block body and create a temperature gradient. A high coefficient of thermal expansion increases the strain in the body and, thus, the thermal stresses to the extent that cracking can occur.

The measurement is conducted with the RDC-158 apparatus, where a core sample with a diameter of 50 mm and a height of 50 mm is placed in a furnace, preheated at 300°C, for a given period of time. The length change at the end of the test is recorded and used for the calculation of the coefficient of thermal expansion in $10^{-6}/K$.

This equipment is not suitable for the quality control of graphite electrodes, as different temperature ranges and a higher precision level would be required.



Technical Information

Standard Method	ISO 14420
Property	Coefficient of Thermal Expansion [$10^{-6}/K$]
Sample	Core Ø 50 x 50 mm
Process Time	Maximum 3 hours
Installation	Draft-free workbench
Dimensions (LxWxH)	48 x 56 x 120 cm
Weight	65 kg
Electrical Property	230 V 1/N/PE, 50 Hz 0.5 kW, 2.2 A
Fluid Property	Air : 3-7 bar
Certified Reference Material	RDC 1158
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)

Certified Reference Material



RDC 1158

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

Video

