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Cement Testing for Compliance

The compliance of cement with standards such as EN 197 / ASTM C 150 is a quality requirement. Quality assurance of the raw materials used in calcination and also during the clinker production is necessary.

CARBOLITE GERO's **AAF 1100°C Ashing Furnaces** and **CWF 1200°C and 1300°C General Purpose Furnaces** are ideally suited for loss on ignition tests. Their use ensures that the production process meets quality standards and provides ash samples for additional analysis.

In addition, the burnability or free lime content of the clinker may be tested at intervals using our higher temperature **RHF 16/8 (1600°C) Furnace**. This is particularly important in situations where there is variability in the raw materials.

TEST STANDARD	TITLE	MATERIAL	TEST TEMP	CARBOLITE PRODUCTS
BS EN 196-2:2013	Chemical Analysis of Cement	Dried Pumice Stone Cement	110 – 1175 °C	AX, PF & PN Ovens CWF & ELF
BS EN 450-1:2012	Fly Ash for Concrete Chemical & Physical requirements	Fly Ash	500 – 550 °C	CWF & ELF
BS EN 13639:2002	Determination of total organic carbon	Limestone	75 – 900 °C	AX, PF & PN Ovens Tube Furnaces
BS 7929:2016	Moisture content	Limestone fines	105 °C	AX, PF & PN Ovens
BS EN 15403:2011	Determination of Ash content	Solid Recovered Fuels (SRF)	250 – 550 °C	AAF & AAF-BAL
BS EN 15414-3:2011	Moisture content of SRF	Solid Recovered Fuels (SRF)	105 °C	AX, PF & PN Ovens

Table 1: Tests which may be carried out with Carbolite Gero ovens and furnaces

Pilot Plant / Laboratory Manufacturing

For Cement producers who wish to reproduce the Cement manufacturing process in a laboratory / pilot plant there is a requirement to mimic the standard manufacturing process shown below:

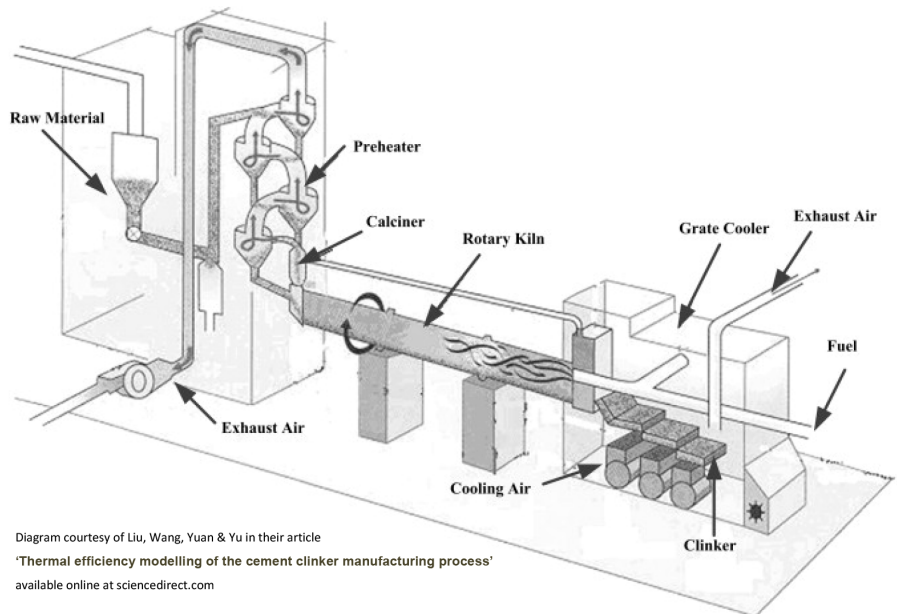


Figure 1: 'Thermal efficiency modelling of the cement clinker manufacturing process' available online at www.sciencedirect.com

Carbolite Gero's **RHZZ Rotating Horizontal Tube Furnace** has a 5L vibrating feeder for raw materials.

The furnace itself enables the user to simultaneously heat and mix raw materials mimicking real-world rotary kiln. With a maximum 1150 °C operating temperature the work tube - which can be up to 75 mm in diameter - rotates and is suitable for continuous material processing even in an inert atmosphere if required.

Time in the heated zone(s) depends on the pitch angle of the tube (horizontal to 10°), the rotation speed (1.5-10 rpm), the length of tube used (600 mm, 900 mm or 1000 mm) and the flow properties of the raw materials as they are heated and mixed. The final heated and mixed clinker is delivered to a hopper where it can be cooled.



Figure 2: RHZZ Rotating Horizontal Tube Furnace