

Limestone calcination process (Rotary kiln)

Limestone composition (%)

Composition	CaO	MgO	CO ₂	SiO ₂	Fe ₂ O ₃ Al ₂ O ₃
Limestone(good)	54.10	0.65	43.20	0.60	0.91
Limestone(bad)	47.30	3.95	40.50	6.25	1.97



The main equipment of rotary kiln for calcination of lime are preheater, rotary kiln and cooler. Auxiliary equipment are limestone storage equipment, supply equipment, waste gas treatment and dust removal equipment, product processing and storage equipment and combustion equipment, etc..

Limestone through the crusher to 10mm-50mm, by supply equipment into the preheater, forming material layer where the downward flow, Then by a variable speed rotary vane discharge device through the chute supply rotary kiln.

High-temperature gas(1000-1100 °C) out of the kiln, after the cyclone dust separating the contained dust, through the pipeline rise into the preheater, during the filling layer, pass the heat to the limestone, then leave the preheater. Gas outlet temperature of 250 °C -350 °C , limestone is heated to about 700 °C, the degree of decomposition is generally about 20%.

In preheater, preheating -limestone is sent into the rotary kiln, relying on the slope of the kiln and slow rotation. On the one hand, limestone is moving toward the exit side, while the heat from the burner to be completed after firing, it is cooled slightly before the exit through the outlet of the kiln into the cooler parts of the hood.

The fuel (coal, natural gas, heavy oil, etc.) which entering from the burner immediately gasification combustion, to generate a high temperature gas, mainly through the radiation and heating raw materials, to make it decomposing decarbonization acid.



The product which is discharged from the kiln, flows downwards through the curing room and the filling layer heat exchange area, and is discharged from the ash discharging machine which is located in the lower part of the kiln. When the product through the filling layer and the heat exchanging portion, The rising cooling air -which is sent by cooling fan-in cooler carries out counter-current heat exchange. It is cooled to below 100 °C , additional cooling air is conducted into heat exchange products 500-600 °C , all as secondary fuel combustion air into the kiln to improve the thermal efficiency and save energy.