

DUSTMASTER®

Applications

DustMASTER® System Conditions Cement Kiln Dust For Safe Landfill Disposal



DustMASTER 200 tph Series I system installed under storage silo with truck drive through.

Cement Kiln Dust, known throughout the cement manufacturing industry as CKD, is an unstable material that is drawn off of the process kiln and collected via dry collection methods such as dust collector bag-houses. Disposal of the nuisance material, CKD has been a challenge for many years for producers, that is until the DustMASTER® was designed.

CKD is very difficult to condition due to its high temperature and high percentage of free lime within the material.

High volumes of steam can be generated during the mixing cycle due to the materials heat and exothermic reactions occurring.

DustMASTER Enviro Systems was contacted by a cement manufacturer in the Western part of Canada with a request to condition their CKD with water to prepare it for on-site landfill disposal. After reviewing the application, DustMASTER's engineers proposed conducting a test - at our facility—using samples (in this case) CKD generated by the cement producer. The test was conducted with a 20 tph DustMASTER processing system. The testing procedure required water being added to the CKD, from 15% to 25% by weight, and a 60–180 second mixing cycle.

After running numerous tests with varying amounts, DustMASTER engineers selected a 25% water addition and kept the mixing cycle at 120 seconds. This formula produced a dust-free product that the mill found to be acceptable for handling and proper landfill disposal.

Due to large amounts of CKD collected at the mill, a DustMASTER 200 TPH series I system was selected.

The DustMASTER series I system consists of a turbin style pan mixer with a hydraulically operated discharge door, a material weigh hopper, a metered water system and control.

Because of material high temperature (350°F) and exothermic reactions, the entire mixing cycle was extended to reduce the steam being generated.

Therefore, the mixing system was derated to process 100 TPH of CKD.

We designed and built a programmable control, complete with a 100% manual override, to operate the DustMASTER system. The custom built control is programmed to add the CKD and water concurrently with amounts of each material metered at specific ratios of each other to control the reaction and steam generation within the mixer.

Since installation, the system has proven a very successful application with hundreds of thousands of tons processed.

With continued environmental legislation, all types of industry will have to address its waste problem, whether it be hazardous or non-hazardous. Required to landfill, or if possible recycle its waste.

DustMASTER Enviro Systems has the knowledge and equipment to meet these industry's needs. Call us and let us handle your difficult waste materials.



The DustMASTER programmable controller with 100% manual override, & load cell readout.

Processing Cement Kiln Dust

Type of Company: Portland Cement Mill

Location: Western Canada

System: 20 tph DustMASTER Test Unit

Product Tested: CKD from the mill

Objective: Test was conducted to determine if a DustMASTER system could successfully process water with the CKD to achieve a dust-free product for landfill disposal.

TEST DATA	TEST #1	TEST #2	TEST #3
Water by Weight	15%	20%	25%
Mix Time	120 sec.	120 sec.	120 sec.
Dry CKD Density	60#/cu. ft.	60#/cu. ft.	60#/cu. ft.
Conditions Produced	Non dusting Marble Size Lumps	Non dusting Small/Medium balls	Non dusting Small/Medium balls Damp earth consistency
Unloading Time	20 sec.	20 sec.	20 sec.

Final product was dust free, with 25% water and a 120-second cycle. Some steam and heat of hydration present. The ball material and all fines were wetted through. The CKD was acceptable for transportation and landfill disposal.



The 200 tph DustMASTER unit in place under a CKD storage silo.



The DustMASTER with system controls.

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