

# **Comparison between Laboratory Leaching Properties and Field Experiments of MSWI Bottom Ash as an Unbound Granular Material for Road Pavements**

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**KEYWORDS:** road base, MSWI bottom ash, leaching

## **ABSTRACT**

The potential use of bottom ash from municipal solid waste incineration (MSWI) as an aggregate substitute in unbound granular layers of a road pavement is investigated. The mechanical behaviour of bottom ash has already been proven to be acceptable for this application based on the Spanish Road Regulations. Actually, the potential environmental impact is the key point for the use of bottom ash as a road material.

The environmental risk (leaching potential) of the use of bottom ash in this application is assessed with the Dutch availability test NEN7341 and the single-batch and two-stage batch European CEN12457 leaching tests. The CEN standard tests have also been applied to different grain size fractions to identify the main source of major releases in order to recommend some prevention measures that may improve the ash quality.

The tests carried out demonstrate that bottom ash meets the requirements established by the Catalanian (NE Spain) standards for bottom ash valorisation. However, since these environmental standards are thought to be more permissive than the Dutch standards, the classification of the Dutch Building Materials Decree, which is considered fairly restrictive, is used to identify the constituents with major environmental concern.

A field test has been built in a 15 m experimental road to provide information on the actual leaching behaviour of MSWI bottom ash under field conditions. With the geometrical characteristics of the pavement, the extraction of core-samples and the infiltration rate, the concentrations of leached elements are transformed into cumulative releases as a function of the liquid to solid ratio (L/S), and subsequently compared with the leaching potential predicted with standard laboratory leaching tests. This is very important in order to determine if standard laboratory leaching tests for this material yield realistic predictions on the releases of elements of environmental concern from an unbound granular layer of bottom ash.

Submitted for consideration in the 2005 World of Coal Ash, April 11-15, 2005, Lexington, Kentucky, USA.