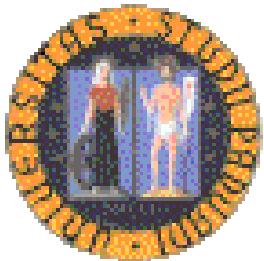




**International Workshop  
ASPHALT RECYCLING AND MATERIALS RE-USE  
IN ASPHALT PAVEMENTS**  
*Identification of open questions and research needs*

**RE-USE OF BOTTOM ASH  
IN ROAD CONSTRUCTION:  
ENVIRONMENTAL AND MECHANICAL CRITICAL POINTS**



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# Incineration of municipal solid waste



**Bottom ash**  
(Si, Fe, Ca, Al, Na, K oxides)



**Potential road  
construction material**



# Municipal Solid Waste Incinerator Bottom Ash in Asphalt concretes for base layers

## ✓ Mechanical & Physical suitability:

The reuse of the bottom ash as substitute of the coarse aggregate is feasible. (Integration with fine natural aggregate in order to avoid excessive bitumen absorption).

## ✓ Environmental suitability:

Critical, depending on the interpretation of the reference standard.

# Municipal Solid Waste Incinerator Bottom Ash in Asphalt concretes for base layers

## UNI EN 12457-2:2004

### Leaching – Compliance test for leaching of granular waste materials and sludges

One stage batch test at a liquid to solid ratio of 10 l/kg for materials  
with particle size below 4 mm (without or with size reduction)

# **Municipal Solid Waste Incinerator Bottom Ash in Asphalt concretes for base layers**

## ***OPEN QUESTION:***

- **The leaching test should be done on compacted laboratory samples, or this verification should be conducted on grains of asphalt concretes?**

# Municipal Solid Waste Incinerator Bottom Ash in Cement bound mixtures for road foundations

## ✓ Mechanical & Physical suitability:

The reuse of the bottom ash as integral substitute of the natural aggregate appears to be feasible.

Development of small bubbles.

## ✓ Environmental suitability:

Still under investigation.

# Municipal Solid Waste Incinerator Bottom Ash in Cement bound mixtures for road foundations



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Utilisation Of Bottom Ash In Road Construction: Environmental And Mechanical Critical Points

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# **Municipal Solid Waste Incinerator Bottom Ash in Cement bound mixtures for road foundations**

## ***OPEN QUESTION:***

- **How is it possible to obtain an accelerated stabilization of the bottom ash?**