

Measures for the reduction of sinter formations in tunnels

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Abstract. A considerable part of the maintenance costs of tunnel structures is related to the inspection, maintenance and repair of the drainage system. The drainage system of tunnels is frequently clogged with Calcium precipitates. Cleaning and water conditioning are cost-intensive for operating companies. Apart from the direct costs associated with inspection, maintenance and repair works of the drainage system indirect costs are generated, such as by the blocking of the tunnel while inspection, maintenance or repair or by the reduction of the permitted operation speed. Sintering and clogging of the drainage systems is mainly caused by dissolution of cement minerals in concrete and mortar and/or by inadequate design and construction of the drainage system and/or grubby workmanship. With long-term studies and in-situ experiments in Austria traffic tunnels the specific input factors for sinter mechanism have been identified and appropriate counter measures could be defined. In particular modified mix designs for shotcretes and mortars have proven to bring a significant beneficial effect. By means of constructional measures and by the application of hardness stabilizers a further reduction of hard deposits inside the drainage system is achievable. The paper will deal with the specific aspects and will propose adequate counter measures.