

## Investigation of the Decisive Factors on the Slump Loss: A Case Study of Cement Factors (Portland Cement Type 2)

**Authors :** M. B. Ahmadi, A. A. Kaffash B., B. Mobaraki

**Abstract :** Slump loss, which refers to the gradual reduction of workability and the amount of slump in fresh concrete over time, is one of the significant challenges in the ready-mixed concrete industry. Therefore, having accurate knowledge of the factors affecting slump loss is a crucial solution in this field. In this paper, an attempt was made to investigate the effect of cement produced by different units on the slump of concrete in a laboratory setting. For this purpose, 12 cement samples were prepared from 6 different production units. Physical and chemical tests were performed on the cement samples. Subsequently, a laboratory concrete mix with a slump of  $13 \pm 1$  cm was prepared with each cement sample, and the slump was measured at 0, 15, 30, 45, and 60 minutes. Although the environmental factors, mix design specifications, and execution conditions—factors that significantly influence the slump loss trend—were constant in all 12 laboratory concrete mixes, the slump loss trends differed among them. These trends were categorized based on the results, and the relationship between the slump loss percentage in 60 minutes, the water-cement ratio, and the LOI and K<sub>2</sub>O values of different cements were introduced.

**Keywords :** concrete, slump loss, portland cement, efficiency

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