

Concrete Technology in Focus

Self-Consolidating Concrete Visual Stability Index (VSI)

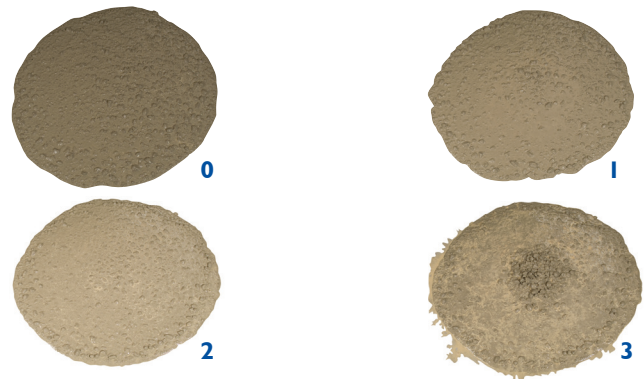
Introduction

This information is provided as a visual tool to assist concrete producers in consistently applying the Visual Stability Index (VSI) to concrete production. The VSI was originally developed by Master Builders Solutions as an excellent reference when producing self-consolidating concrete. The stability of self-consolidating concrete can be observed visually by examining the concrete mass and therefore can be used for quality control of self-consolidating mixtures.

The table below contains Visual Stability Index (VSI) values with corresponding criteria to qualitatively assess the stability of self-consolidating concrete.

Procedure

According to ASTM C1611, after spreading of the concrete has stopped, visually inspect the concrete mixture by observing the distribution of the coarse aggregate within the concrete mass, the distribution of the mortar fraction particularly along the perimeter, and the bleeding characteristics. Assign a Visual Stability Index (VSI) value to the concrete spread using the criteria shown in the table and the photos provided.



Visual Stability Index Values

VSI Value	Criteria
0 = Highly Stable	No evidence of segregation or bleeding.
1 = Stable	No evidence of segregation and slight bleeding observed as a sheen on the concrete mass.
2 = Unstable	A slight mortar halo ≤ 0.5 in. (≤ 10 mm) and/or aggregate pile in the center of the concrete mass.
3 = Highly Unstable	Clearly segregating by evidence of a large mortar halo ≥ 0.5 in. (≥ 10 mm) and/or a large aggregate pile in the center of the concrete mass.

been modified and adopted by ASTM as referenced in ASTM International, Designation C 1611—“Standard Test Method for Slump Flow of Self-Consolidating Concrete.”

¹Daczko, Joseph A., Kurtz, Mark A., “Development of High Volume Coarse Aggregate Self-Compacting Concrete,” Proceedings of the Second International Symposium on Self-Compacting Concrete, 23-25 October, 2001, Tokyo, Japan, pp.403-412.

Daczko, Joseph A., Phillips, Stephen, H.E., “Self-Compacting Concrete in Underground and Mining Applications,” Proceedings of the Second International Symposium on Self-Compacting Concrete, 23-25 October, 2001, Tokyo, Japan, pp. 671-680.

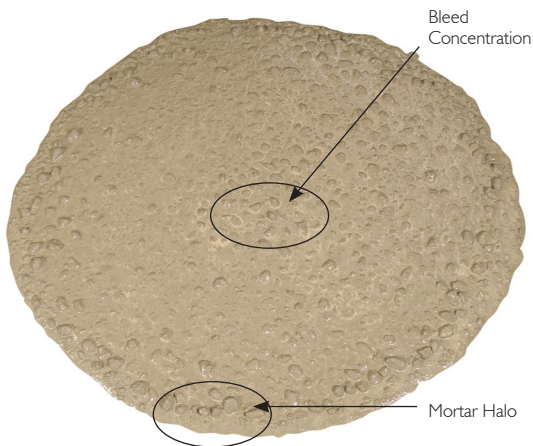
First published by Master Builders Solutions¹, in two papers presented at the Second International Symposium on SCC, the VSI has subsequently



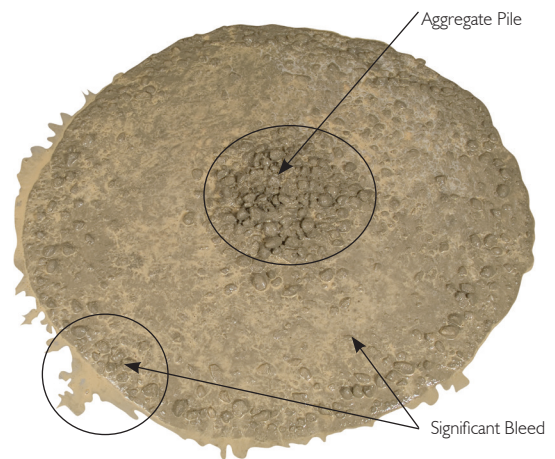
0 = Highly Stable



1 = Stable



2 = Unstable



3 = Highly Unstable

About Master Builders Solutions

Master Builders Solutions is a leading global manufacturer of concrete admixtures, as well as other sustainable solutions for the construction industry, focussed on delivering its vision: **Inspiring people to build better**. Master Builders Solutions provides value-added technology and market-leading R&D capabilities to improve the performance of construction

materials and to enable the reduction of CO2 emissions in the production of concrete. Founded in 1909, Master Builders Solutions has ca. 1600 employees operating 35 production sites globally, supporting their customers in mastering their building challenges of today – for a decarbonised future.

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