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 BASF 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.

<table>
<thead>
<tr>
<th>VSI Value</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = Highly Stable</td>
<td>No evidence of segregation or bleeding.</td>
</tr>
<tr>
<td>1 = Stable</td>
<td>No evidence of segregation and slight bleeding observed as a sheen on the concrete mass.</td>
</tr>
<tr>
<td>2 = Unstable</td>
<td>A slight mortar halo ≤0.5 in. (≤ 10 mm) and/or aggregate pile in the center of the concrete mass.</td>
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<tr>
<td>3 = Highly Unstable</td>
<td>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.</td>
</tr>
</tbody>
</table>

First published by BASF®, in two papers presented at the Second International Symposium on SCC, the VSI has subsequently been modified and adopted by ASTM as referenced in ASTM International, Designation C 1611—“Standard Test Method for Slump Flow of Self-Consolidating Concrete.”


Procedure
According to ASTM C 1611, 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.
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