

U-BOX TEST

BE 70

The U-Box Test is a standardized laboratory method used to evaluate the **filling ability** and **passing ability** (or flowability through obstructions) of fresh self-compacting concrete (SCC). SCC is a highly fluid concrete that consolidates under its own weight without vibration, making it ideal for areas with dense reinforcement. Traditional tests like the slump test are unsuitable for SCC due to its high fluidity, so specialized tests like the U-Box are employed instead.

This test simulates the concrete's ability to flow horizontally through confined spaces, such as around reinforcing bars, providing a direct measure of its performance in real-world applications like congested formwork.

FOLLOWING STANDARD

ASTM C1621

THE U-BOX APPARATUS CONSISTS OF:-

- A U-shaped stainless steel vessel divided into two compartments by a middle wall with a sliding gate (guillotine-style) at the base.
- A horizontal section with an obstacle: typically 3–4 vertical reinforcing bars ($\text{Ø}10\text{--}12\text{ mm}$) spaced 35–50 mm apart to mimic rebar congestion.
- The vertical compartment is filled to a height of about 600–800 mm, and the horizontal trough extends ~500–600 mm.
- Total concrete volume required: Approximately 20 liters.

