

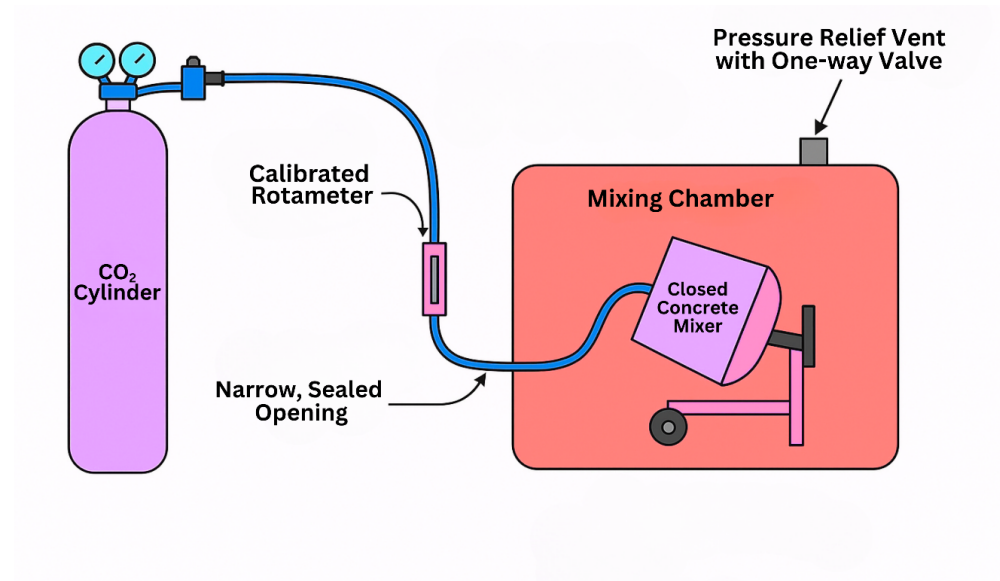


Figure 1. CO₂ injection setup showing regulated gas flow from high-purity cylinder into concrete mixer with safety and leakage-control measures in accordance with ASTM C1768.

Figure 1 shows a controlled CO₂ injection system for concrete mixing. Flow of CO₂ gas from a high-purity cylinder is regulated by a calibrated rotameter before entering the sealed concrete mixer. According to ASTM C1768, the mixing chamber has a pressure relief vent and a one-way valve for safety and leakage control. The setup allows precise and secure carbonation during mixing.

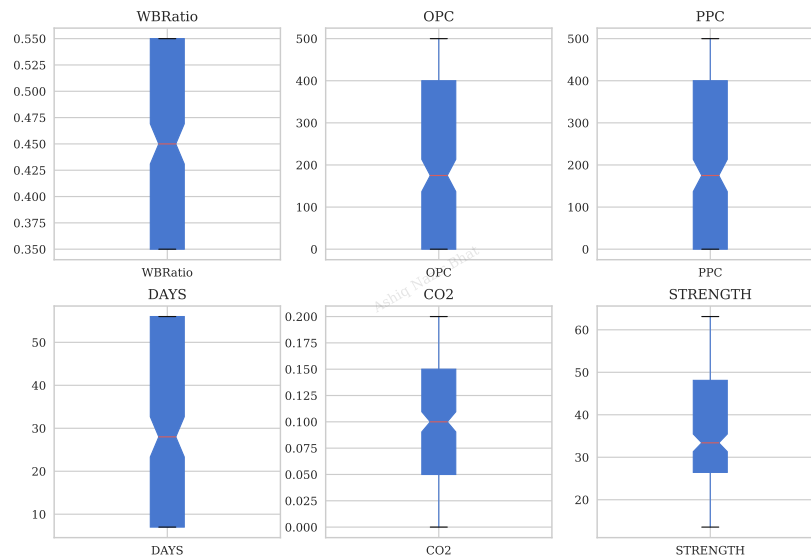


Figure 2. Range of values in dataset features

This Figure 2 displays boxplots illustrating the distribution and variability of the dataset features utilised in the study. The features comprise Water-Binder Ratio (WBRatio), Ordinary Portland Cement (OPC), Pozzolanic Portland Cement (PPC), Curing Days (DAYS), CCO₂ dosage, and Compressive Strength (STRENGTH). Each plot depicts the central tendency, dispersion,

10 and potential outliers, emphasising the range of values evaluated during model development
11 and analysis.

12 The Indian standards referenced in the article are as follows: [IS: 516 \(1959\)](#); [IS8 \(2013\)](#); [BIS](#)
13 [\(1991\)](#); [IS9 \(1999\)](#); [BIS \(2016\)](#); [IS: 269-2015 \(2020\)](#) and the ASTM standards referenced in the
14 article are as follows: [C 39/C 39M – 05 \(2003\)](#); [AST \(2005\)](#); [ASTM C33/ C33M \(2008\)](#); [ASTM C](#)
15 [595 – 08a \(2008\)](#); [C1768/C1768M \(2012\)](#); [ASTM C150 \(2017\)](#)

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