

# Preliminary Evaluation of Cement Mortars Containing Waste Silt Optimized with the Design of Experiments Method

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## Equation 1S. Predicted model for FS

$$Y_{FS} = 17.27 \left( \frac{A-0.22}{0.2083} \right) - 13.02 \left( \frac{B-0.12}{0.2083} \right) + 9.68 \left( \frac{C-0.43}{0.2083} \right) + 0.51 \left( \frac{D-0.02}{0.2083} \right) + 73.11 \left( \frac{E-0.0017}{0.2083} \right) + \left( \frac{\left( \frac{B-0.12}{0.2083} \right) \times (D-0.02)}{0.2083} \right) \times 44.85 + \left( \frac{\left( \frac{C-0.43}{0.2083} \right) \times (D-0.02)}{0.2083} \right) \times 7.61 + \left( \frac{\left( \frac{A-0.22}{0.2083} \right) \times (C-0.43)}{0.2083} \right) \times 31.00 \times \left( \frac{A-0.22}{0.2083} - \frac{C-0.43}{0.2083} \right) + \left( \frac{\left( \frac{A-0.22}{0.2083} \right) \times (D-0.02)}{0.2083} \right) \times 23.95 \times \left( \frac{A-0.22}{0.2083} - \frac{D-0.02}{0.2083} \right) + \left( \frac{\left( \frac{C-0.43}{0.2083} \right) \times (D-0.02)}{0.2083} \right) \times (-15.11) \times \left( \frac{C-0.43}{0.2083} - \frac{D-0.02}{0.2083} \right) + \left( \frac{\left( \frac{B-0.12}{0.2083} \right) \times (E-0.0017)}{0.2083} \right) \times (-1462.16) \left( \frac{B-0.12}{0.2083} - \frac{E-0.0017}{0.2083} \right)$$

, where A, B, C, D and E represent cement, water, sand, silt and additive, respectively.

## Equation 2S. Predicted model for UCS

$$Y_{UCS} = 85.70 \times \left( \frac{A-0.22}{0.2083} \right) - 62.65 \left( \frac{B-0.12}{0.2083} \right) + 48.61 \left( \frac{C-0.43}{0.2083} \right) + 9.00 \left( \frac{D-0.02}{0.2083} \right) - 282.32 \left( \frac{E-0.0017}{0.2083} \right) + \left( \frac{\left( \frac{A-0.22}{0.2083} \right) (B-0.12)}{0.2083} \right) (-11.66) + \left( \frac{\left( \frac{B-0.12}{0.2083} \right) (C-0.43)}{0.2083} \right) (-21.87) + \left( \frac{\left( \frac{B-0.12}{0.2083} \right) (D-0.02)}{0.2083} \right) 169.97 + \left( \frac{\left( \frac{C-0.43}{0.2083} \right) (D-0.02)}{0.2083} \right) 0.21 + \left( \frac{\left( \frac{A-0.22}{0.2083} \right) (E-0.0017)}{0.2083} \right) 5901.56 + \left( \frac{\left( \frac{B-0.12}{0.2083} \right) (E-0.0017)}{0.2083} \right) 808.67 + 195.20 \left( \frac{\left( \frac{A-0.22}{0.2083} \right) (C-0.43)}{0.2083} \right) \left( \frac{A-0.22}{0.2083} - \frac{C-0.43}{0.2083} \right) + 254.78 \left( \frac{\left( \frac{A-0.22}{0.2083} \right) (D-0.02)}{0.2083} \right) \left( \frac{A-0.22}{0.2083} - \frac{D-0.02}{0.2083} \right) + \left( \frac{\left( \frac{B-0.12}{0.2083} \right) (C-0.43)}{0.2083} \right) (D-0.02) \left( \frac{\left( \frac{C-0.43}{0.2083} \right) (D-0.02)}{0.2083} \right) \left( \frac{C-0.43}{0.2083} - \frac{D-0.02}{0.2083} \right) - 2372489 \left( \frac{\left( \frac{A-0.22}{0.2083} \right) (B-0.12)}{0.2083} \right) (E-0.0017)$$

, where A, B, C, D and E represent cement, water, sand, silt and additive, respectively.