

Water-Cement Ratio

Civil Engineering

The number that governs strength and life.

Strength and durability fall as the water-cement ratio rises, because surplus water leaves voids behind.

$w/c = \text{mass of water} \div \text{mass of cement}$

w/c around 0.4

Needs a plasticiser.

Strong but stiff mix

w/c around 0.6

And more porous.

Workable, much weaker

Water added on site

Not permitted.

Strength drops sharply

THE COMMON MISTAKE

× **Adding water to restore workability**

✓ **Use a plasticiser instead**

Water added after batching raises w/c, cuts strength and raises permeability, and it puts the load outside its own specification.

Educational reference. Maximum w/c ratios are set by exposure class in the governing concrete standard.