

DETAILED CONCRETE MIX DESIGN REPORT

IS 10262:2009 - Preliminary Mix Proportioning + Trial Mix Sheet

M40 benchmark | 1 m3 basis | SAMPLE PREVIEW - WATERMARKED

1. Design inputs

Characteristic strength fck	40.00 N/mm2
Standard deviation s	5.00 N/mm2 - Table 1 first-instance assumption
Target mean strength	$40 + 1.65 \times 5 = 48.25$ N/mm2
Maximum w/c	0.45
Adopted w/c	$\min(0.40, 0.45) = 0.40$
Nominal aggregate size	20 mm
Slump	100 mm
Fine aggregate	Zone I
Placing	Pumping

2. Final preliminary mix - 1 m3

Cement / OPC	350 kg
Water	140 kg
Chemical admixture	7.0 kg
Fine aggregate (SSD)	896 kg
Coarse aggregate (SSD)	1,140 kg
20 mm coarse fraction	684 kg (60%)
10 mm coarse fraction	456 kg (40%)

Calculation trail

- $fck + 1.65s = 40 + 1.65(5) = 48.25$ N/mm2
- Water reference = 186 kg/m3; 100 mm slump adjustment -> 197 kg/m3
- Superplasticizer water reduction 29% -> 140 kg/m3
- Cement = $140 / 0.40 = 350$ kg/m3
- Table 3: Zone I + 20 mm at w/c 0.50 = 0.60; w/c 0.40 correction +0.02 = 0.62; pumping x 0.90 = 0.56
- All-aggregate absolute volume = 0.743 m3
- Coarse = $0.743 \times 0.56 \times 2.74 \times 1000 = 1,140$ kg; Fine = $0.743 \times 0.44 \times 2.74 \times 1000 = 896$ kg

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TRIAL MIX SHEET

Trial	w/c	Slump	7-day strength	28-day strength	Observations / decision
1	0.400	_____	_____	_____	_____
2	0.400	_____	_____	_____	_____
3	0.440	_____	_____	_____	_____
4	0.360	_____	_____	_____	_____

Proportioning notes

- Trial 2: rework proportions after actual slump/workability observations.
- Trial 3: Trial 2 free w/c increased by 10%.
- Trial 4: Trial 2 free w/c reduced by 10%.
- Use actual material test data, approved grading and project specifications.