



Site Sampling

A practical guide for
site personnel

 **roadstone**
A CRH COMPANY

LOCATIONS

QUARRY LOCATIONS

Cork

1. Ballygarvan
2. Carrigtwohill
3. Castlemore
4. Classis
5. Keim
6. Mallow
7. Midleton

Clare

8. Ballyquinn
9. Bunratty
10. Ryans

Donegal

11. Ballintra
12. Carndonagh
13. Laghey

Dublin

14. Belgard Central
Dispatch / Belgard
Weighbridge
15. Huntstown Finglas
16. Head Office,
Tallaght
17. Swords, Feltrim

Galway

18. Two-Mile-Ditch
19. Kilchreest

Kerry

20. Ballyegan
21. Killarney
22. Killorglin

Kildare

23. Allen, Naas

Kilkenny

24. Bennettsbridge
25. Kilmacow

Laois

26. Ballyadams

Limerick

27. Joseph Hogans

Longford

28. Moyne

Mayo

29. Castlebar

Meath

30. Barley Hill
31. Duleek
32. Mullaghrone
33. Slane

Offaly

34. Tullamore

Roscommon

35. Boyle
36. Cam
37. Castlemine

Tipperary

38. Ballyknockane
39. Killough

Waterford

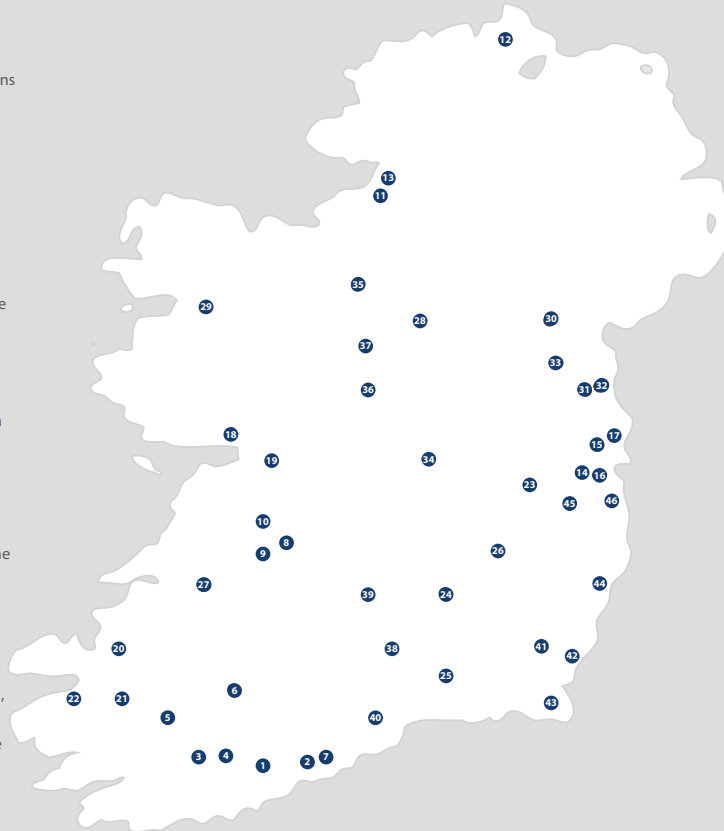
40. Cappagh

Wexford

41. Brownswood,
Enniscorthy.
42. Kilmuckridge
43. Killinick

Wicklow

44. Arklow
45. Dorans Pit
46. Fassaroe, Bray



CONTENTS

4-5	Concrete Slump Testing
6-7	Standards For Testing Concrete
8-9	Concrete Cube Making
10	Storing Cubes
11	Technical Table

CONCRETE SLUMP TESTING

STEP 1

- Empty the sampling buckets onto the mixing tray
- Scrape each bucket clean onto the tray



STEP 2

- Thoroughly remix the sample shovelling into a heap
- Turn the heap over to form another heap
- Do this three times



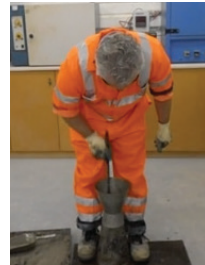
STEP 3

- Ensure the slump cone is clean and damp
- Place the metal plate on a solid level base away from vibration and other disturbance
- Place the cone on the plate and stand on the foot-pieces



STEP 4

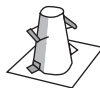
- Fill the cone in three equal depth layers
- Use the standard slump rod
- Rod each layer 25 times
- Spread the blows evenly over the area
- Make sure the rod just penetrates the previous layer
- Heap the concrete above the top of the cone before rodding the third layer



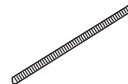
Sampling Scoop



Buckets



Slump Cone and Rigid Metal Plate



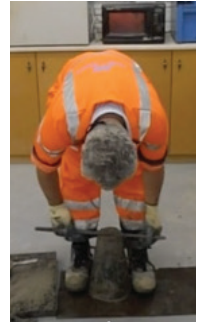
Slump Rod



Scoop

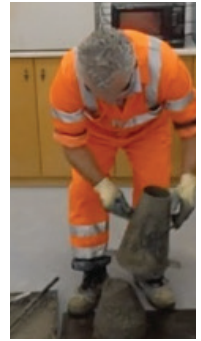
STEP 5

- Top up if necessary
- Use the rod with a sawing and rolling motion to strike the concrete level with the top of the cone
- Carefully clean off spillage from side and baseplate



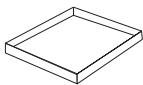
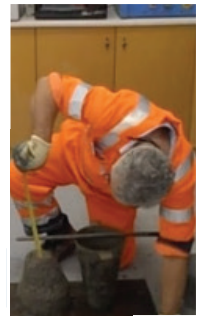
STEP 6

- Carefully lift the cone straight up and clear, to a count of between 2 and 5 seconds

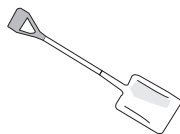


STEP 6

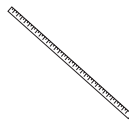
- Lay the rod across the upturned slump cone
- Measure the distance between the underside of the rod and the highest point of the concrete – the true slump
- Record this distance to the nearest 10mm as per EN 12350-2
- In all cases record the type of slump
- If the slump is not true, take a new sample and repeat the test
- If the second slump is not true, get advice
- Complete the Sampling and Testing Certificates



Mixing
Tray



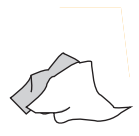
Shovel



Steel Rule



Sampling &
Testing Certificates



Cloth

Standards for testing/ sampling fresh concrete:

Sampling EN 12350-1

Slump Test EN 12350-2

Making and Curing Cubes EN 12390-2

Standard for testing hardened concrete:

Compression Strength EN 12390-3

GET IT RIGHT

It is vital that all the procedures set out in the above standards are followed correctly. Failing to follow these procedures and recommendations will lead to incorrect results on concrete samples.

SAFETY

When Portland cement is mixed with water, or even becomes damp, alkalis are released which can be harmful to the skin. The effect depends on the length of time of contact, any abrasion on the individual and the part of the body involved. Suitable protective clothing must be worn. If eyes are affected they should be washed out without delay and medical attention sought.

TRAINING

Training on Site Sampling is available on request.



GENERAL

When sampling for tests, ensure sample is taken correctly and is representative of the concrete as delivered.

COMPOSITE SAMPLE

- RECOMMENDED FOR SITE SAMPLES

For discharged concrete, take increments well distributed from at least five different areas and thoroughly mix together. When sampling from concrete as it is discharged, at least five increments must be taken through the moving stream, sampling the whole width and depth - not just the top part. A sample to be at least one and a half times the quantity required for the tests.

SPOT SAMPLE

- RECOMMENDED FOR PLANT SAMPLES

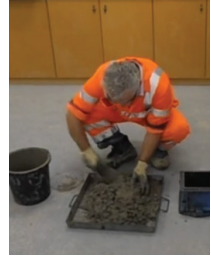
Concrete sampled from part of the load consisting of five increments thoroughly mixed together. The sample to be at least one and a half times the quantity required for the tests.

Cubes and Slump Tests should always be carried out by competent trained operatives. Where possible all sampling should be carried out on concrete as soon as it arrives on site.

CONCRETE CUBE MAKING

STEP 1

- Check the moulds are clean and lightly oiled with all bolts tightened so that there will be no leakage
- Ensure that the correct halves of the mould are used and that the corner lining pins are correctly located
- Thoroughly remix the sample as described for the slump test



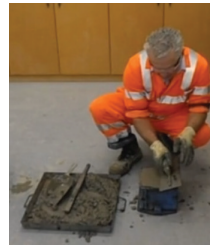
STEP 2

- Fill the mould with concrete in 50mm layers
- Using the special tamping bar, compact the concrete with not less than 25 tamps for each of the layers



STEP 3

- Remove surplus concrete using two steel floats and carefully level surface using float
- Wipe the mould edges clean
- Number the moulds for identification and record details



STEP 4

- Cover each mould with a damp cloth and plastic sheet
- Store inside at normal room temperature (15°C to 25°C) e.g. on top of the curing tank
- Protect the cube moulds at all times from high and low temperatures (especially frost), vibration and drying winds
- Complete the Sampling and Cube Making Certificates



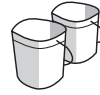
MAKING CUBES

You will need this equipment

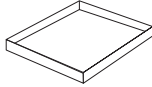
Sampling Scoop



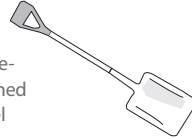
Buckets or Wheelbarrow



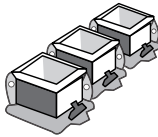
Mixing Tray



Square-Mouthed Shovel



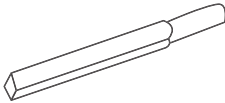
Cube Moulds



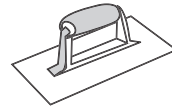
Small Scoop



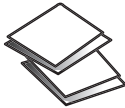
Tamping Bar



Steel Float



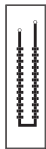
Damp Cloth & Plastic Sheet



Sampling & Testing Certificates



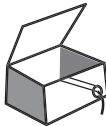
Maximum/Minimum Thermometer



Felt Tip Pen Or Crayon



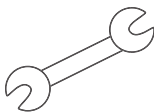
Curing Tank



Cloth



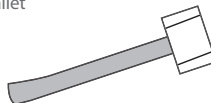
Spanner



Brush and Mould Oil



Mallet



STORING CUBES

STEP 5

- Record the maximum/minimum overnight storage temperatures on the certificate

STEP 6

- Slacken all nuts

STEP 7

- Part the sides of the mould, tapping gently with the hide hammer
- Lift off carefully
- Remember, fresh cubes are easily damaged unless handled carefully

STEP 8

- Mark each cube with its identification number on two of its cast sides

STEP 9

- Place the cubes in the curing tank
- Clean and reassemble the moulds

STEP 10

- Check the water temperature is controlled at $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and the cubes are covered by water which is circulating
- Make sure the power supply is not switched off day or night
- Check the temperature range daily using the maximum/ minimum thermometer
- Keep a record of the readings

STEP 11

- For dispatch to test laboratory, wrap the wet cubes in damp cloths, then plastic bags and pack in trays
- Attach the sampling, testing, cube making and storage certificates, plus the order for testing, to the package

Table 2A. Slump Tolerance

Specified target slump mm	Not more than the following from the specified target value		Consistence Class
≤40	-30	+30	S1
50 to 90	-40	+40	S2
≥100	-50	+50	S3/S4

Refer to Table NA. 8 of NA:2015 to I.S. EN206:2013

Table 2. Consistence Classes

Target Slump Range	Consistence Classes
10 - 40mm	S1
50 - 90mm	S2
100 - 150mm	S3
160 - 210mm	S4
220mm+	S5

Refer to Table 3 (Irl). I.S. EN 206.



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