

## Tagged Concrete Samples

### FIELD OF INVENTION

The invention relates to a method of tagging identification information to a concrete sample  
5 and a moulded concrete sample tagged with identification information.

### BACKGROUND

During construction, a sample of ready-mix concrete is taken from e.g. every six truckloads  
of ready-mix concrete, for testing purposes. The ready-mix concrete sample is poured into  
10 a concrete mould, and delivered to material testing labs for testing. Millions of such  
concrete samples are tested in a lab over a period of time.

Each concrete sample may be cured in water, weighed and tested for quality and strength  
at accredited laboratories for a pre-defined time period depending on the type of  
15 construction. A concrete sample may be tested at pre-defined times period, e.g. three,  
seven or twenty eight days.

Since millions of such concrete samples are tested in a lab, identification of the concrete  
samples is very crucial. Manual marking of the concrete samples is tedious and  
20 impracticable considering the numbers involved. Therefore, automation is employed to  
identify a concrete sample. For instance, a bar-coded paper label may be struck on a  
surface of each concrete sample. The bar-code contains information related to the location  
of the construction site, the supplier, batch number, date and so on. Often the paper label  
may fall off the concrete sample, or be torn, or the bar-code may become illegible. Also,  
25 when a substantial number of such concrete samples are stored at a testing lab,  
misidentification of the concrete samples due to human error poses serious problems. For  
instance, a lab technician could erroneously test a seven-day old concrete sample  
assuming that it is a twenty eight-day old concrete sample in which case the strength of the  
concrete sample could go wrong. This may be onerous to a construction company, since a  
30 mistaken identity would slow down a construction project.

There is thus a need to provide a method of tagging identification information to a concrete  
sample and a moulded concrete sample tagged with identification information that seeks to  
address one or more of the above disadvantages.

## SUMMARY

According to a first aspect of the present invention, there is provided a method of tagging identification information to a concrete sample, the method comprising the steps of: pouring wet concrete mix into a mould; providing a transparent bag; inserting into the transparent bag a label containing identification information of the concrete sample; embedding at least two opposite edges of the plastic bag into the wet concrete mix to obtain a concrete sample embedded with the transparent plastic bag containing the label.

The embedding step may comprise placing the transparent bag containing the label on the wet concrete mix; placing a guide plate on the bag such that opposing walls of the guide plate rest on the opposing edges of the transparent; pushing the guide plate into the concrete mix such that the two opposing edges of the transparent bag are embedded into the wet concrete mix.

The method may further comprise the steps of: levelling the concrete mix such that the top surface the concrete mix is flush with a top surface of the guide plate and a top surface of the mould; and removing the guide plate resulting in a concrete sample embedded with the barcode label.

The transparent bag may be sealed before being embedded into the wet concrete mix. The transparent bag may be made of plastic. The transparent bag may be a zip lock type.

The identification information on the label may be in both alphanumeric and barcode form. The identification information may include one or more of a group consisting of the construction company, the construction site, the supplier of the concrete sample, date of pouring the concrete sample, and the truck number. The label may be a paper label.

According to a second aspect of the present invention, there is provided a moulded concrete sample tagged with identification information, wherein the identification information is provided on a label inside transparent bag with at least two opposing edges of the transparent bag embedded into a surface of the moulded concrete sample..

The transparent bag may be sealed before being embedded into the wet concrete mix. The transparent bag may be made of plastic. The transparent bag may be a zip lock type.

The identification information on the label may be in both alphanumeric and barcode form. The identification information may include one or more of a group consisting of the

construction company, the construction site, the supplier of the concrete sample, date of pouring the concrete sample, and the truck number. The label may be a paper label.

## BRIEF DESCRIPTION OF THE DRAWINGS

5 Embodiments of the invention will be better understood and readily apparent to one of ordinary skill in the art from the following written description, by way of example only, and in conjunction with the drawings, in which:

Figure 1 is an exemplary view of a transparent plastic bag containing a barcode label in accordance with an embodiment of the present invention;

10 Figures 2a and 2b are perspective views of a guide plate in accordance with an embodiment of the present invention;

Figures 3a to 3g are exemplary views of a process for embedding the transparent plastic bag of figure 1 into a concrete sample in accordance with an embodiment of the present invention; and

15 Figure 4 is a perspective view of a concrete mould containing wet concrete-mix embedded with the transparent plastic bag of figure 1.

## DETAILED DESCRIPTION

Embodiments of the present invention can avoid or at least substantially reduce the problem of mix-up caused by human errors. Embodiments of the present invention can advantageously help in accurate identification of the concrete samples. Embodiments of the present invention can significantly improve the traceability and information in the event of a failure. Thus, embodiments of the present invention can help in improving quality control at all construction levels.

25 Figure 1 is an exemplary view of a transparent plastic bag 100 containing a barcode label 103 in accordance with an embodiment of the present invention. In the embodiment, the transparent plastic bag 100 used may be made of polythene and is a zip-lock type having a closed edge 109, a center portion 101 and an open edge 111. The closed edge 109 contains a void area 108 while the open edge contains a void area 110. Near the void area 110, there is a zip-lock 113 for sealing the plastic bag 100 after inserting the barcode label 103. The barcode label 103 is usually a paper printed with identification information in both alphanumeric 105 and a barcode 107 form. The identification information 105 includes information about the construction company, the construction site, the supplier of the concrete sample, date of pouring the concrete sample, the test lab, truck number etc. The identification information 105 that can be easily read as well as obtained by a barcode reader (not shown).

In the embodiment, the plastic bag has a length of 11.7 cm and a breadth of 7.8 cm. The barcode label 103 has a length of 8 cm and a breadth of 5 cm. After inserting the barcode label 103 into the center portion 101, the plastic bag 101 is sealed using the zip-lock 113.

5

Figures 2a and 2b are perspective views of a guide plate 200 in accordance with an embodiment of the present invention. The guide plate 200 has a substantially rectangular flat base 201 and a handle 203. On its opposite edges, the flat base 201 has two substantially perpendicular walls 207, 209 that extend away from the handle 203.

10

In the embodiment, the base 201 has a length of 9 cm and a breadth of 8.5 cm. The height of the two walls 207, 209 is 1.5 cm. The guide plate may be made of e.g. steel. The handle 203 is cylindrical having a height of 2.5 cm. The handle 203 may be made of e.g. wood or steel.

15

Figures 3a to 3g are exemplary views of a process for embedding the barcode label 103 of figure 1 into a concrete sample in accordance with an embodiment of the present invention.

20

In figure 3a, a plurality of cubical concrete moulds 303 containing wet concrete mix 301 are shown. In figure 3b, a plastic bag 100 containing a barcode label 103 is placed on the wet concrete mix 301. In figure 3c, a guide plate 200 is placed on the plastic bag 100 such that the two walls 207, 209 of the guide plate 200 rest on the void areas 108 and 110 of the plastic bag 100. In Figure 3d, using the handle 203, a technician pushes the guide plate 200 into the concrete mix whereby the two void area 108, 110 are embedded into the concrete mix 301. In figure 3e, using a spatula 305, a technician levels the concrete mix 301 such that the surface of the concrete mix 301 is flush with the top surface of the guide plate 200 as well as the top surface of the concrete mould 301. Figure 3f shows two cubical moulds in which the two walls 207, 209 of the guide plates 200 are completely inserted into the concrete mix 301 resulting in the plastic bag 100 being embedded inside the concrete mix 301. In Figure 3g, the guide plates 200 are pulled out (in about five minutes after the insertion in one embodiment) resulting in a concrete sample 301 embedded with the barcode label 103 in the plastic bag 100.

25

30

35

Figure 4 is a perspective view of a concrete mould 303 containing concrete mix 301 embedded with a plastic bag of figure 1 containing the barcode label 103. The cubical mould 303 has a dimension of about 150 mm X 150 mm X 150 mm in the example embodiment. The concrete mix 301 is allowed to dry for about twenty four hours before

demoulding out the concrete sample 301 embedded with the barcode label 103 in the plastic bag 100.

It will be appreciated by a person skilled in the art that numerous variations and/or  
5 modifications may be made to the present invention as shown in the specific embodiments  
without departing from the spirit or scope of the invention as broadly described. The  
present embodiments are, therefore, to be considered in all respects to be illustrative and  
not restrictive.

10

15

20

25

30

35

**CLAIMS**

1. A method of tagging identification information to a concrete sample, the method  
5 comprising the steps of:  
pouring wet concrete mix into a mould;  
providing a transparent bag;  
inserting into the transparent bag a label containing identification information of the  
concrete sample;  
10 embedding at least two opposite edges of the plastic bag into the wet concrete mix  
to obtain a concrete sample embedded with the transparent plastic bag containing the  
label.
2. The method according to claim 1, wherein the embedding step comprises:  
15 placing the transparent bag containing the label on the wet concrete mix;  
placing a guide plate on the bag such that opposing walls of the guide plate rest on  
the opposing edges of the transparent;  
pushing the guide plate into the concrete mix such that the two opposing edges of  
the transparent bag are embedded into the wet concrete mix.  
20
3. The method according to claim 2, further comprising the steps of:  
levelling the concrete mix such that the top surface the concrete mix is flush with a  
top surface of the guide plate and a top surface of the mould; and  
removing the guide plate resulting in a concrete sample embedded with the  
25 barcode label.
4. The method according any one of the preceding claims, wherein the transparent  
bag is sealed before being embedded into the wet concrete mix.
- 30 5. The method according to any one of the preceding claims, wherein the transparent  
bag is made of plastic.
6. The method according to any one of the preceding claims, wherein the transparent  
bag is a zip lock type.  
35
7. The method according to any one of the preceding claims, wherein the identification  
information on the label is in both alphanumeric and barcode form.

8. The method moulded according to any one of the preceding claims, wherein the identification information includes one or more of a group consisting of the construction company, the construction site, the supplier of the concrete sample, date of pouring the concrete sample, and the truck number.
9. The method according to any one of the preceding claims, wherein the label is a paper label.
10. A moulded concrete sample tagged with identification information, wherein the identification information is provided on a label inside a transparent bag with at least two opposing edges of the transparent bag embedded into a surface of the moulded concrete sample.
11. The moulded concrete sample according to claim 10, wherein the transparent bag is sealed before being embedded into the wet concrete mix.
12. The moulded concrete sample according to claim 10 or 11, wherein the transparent bag is made of plastic.
13. The moulded concrete sample according to any one of claims 10 to 12, wherein the transparent bag is a zip lock type.
14. The moulded concrete sample according to any one of claims 10 to 13, wherein the identification information on the label is in both alphanumeric and barcode form.
15. The moulded concrete sample according to any one of claims 10 to 14, wherein the identification information includes one or more of a group consisting of the construction company, the construction site, the supplier of the concrete sample, date of pouring the concrete sample, and the truck number.
16. The moulded concrete sample according to any one of claims 10 to 15, wherein the label is a paper label.