

## USE OF CONCRETE CANVAS IN VARIOUS CIVIL ENGINEERING APPLICATIONS

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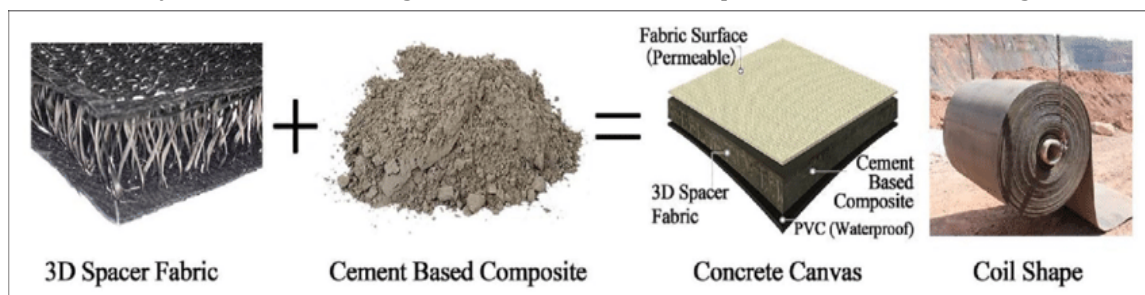
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### ABSTRACT

Concrete is a civil engineering material which is made up of Portland cement, water & aggregate in that variation can be done according to requirement. Thus Concrete has always an increasing demand in the construction as a material. Concrete can use in various condition due to its simplicity. Concrete is widely used in place like bridges, highway, building, dams, canal and ditch lining. Due to its properties like durability, low maintenance & also fire and wind resistant. Thus concrete has also many disadvantages like high cost of repair works. Due to weather action, seepage in canal due to water action and the main problem is the flexibility of concrete, hence to overcome this problem the development of concrete canvas has done. The aim of this report is to explain the material required to make concrete canvas and test to perform and its applications. Concrete canvas is a ready to use material it just needed to be hydrated and it will take the desired shape. It's simple to install and also use as an replacement of conventional concrete.

### I. INTRODUCTION

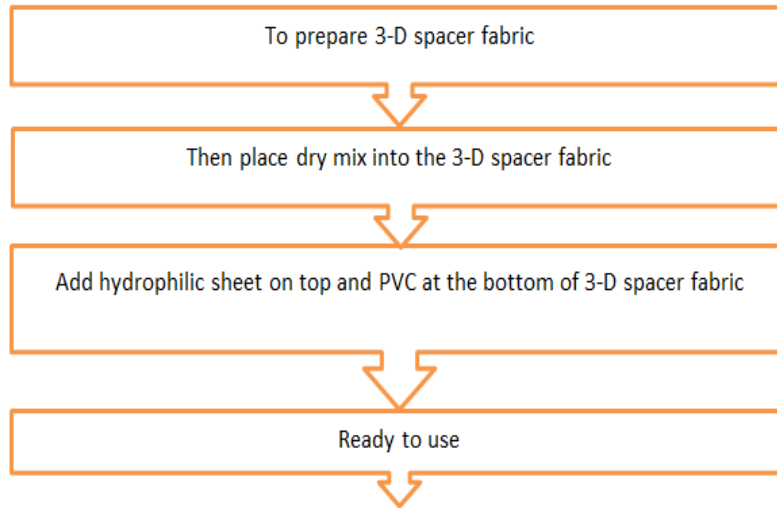
The invention of concrete canvas was done by the engineer peter brewin and William crawford. In a competition held at London (2004) further they recognized & also won a great award. Concrete canvas is a flexible concrete which get hard when hydrated to form an durable, waterproof and fire resistant. The application of concrete canvas is much easy and can be done without any tool or mixing equipment. Just place the concrete canvas over the area and pour some water on it. The concrete canvas is consist of 3-D spacer fabric, dry mix according to requirement and one side is place with PVC and top layer with hydrophilic sheet. The role of hydrophilic sheet is to allow water entry to get hydration of concrete or water can be sprayed to concrete canvas. For placement of concrete canvas can be done by using nail gun, staples, and tie rod. This construction is very efficient, time saving and reduce the adverse impact on nature thus making it eco friendly.



#### Material required

1. 3-D spacer fabric
2. Cement
3. Fine aggregate
4. Adhesive
5. PVC sheet
6. Bituminous sheet
7. Hydrophilic sheet

**II. METHODOLOGY**



**III. RESULT**

**Compressive Test**

SR. No.	Sample	Weight (kg)	Load (kn)	Area (m <sup>2</sup> )	Compressive strength (n/mm <sup>2</sup> )
1.	B1	0.3	930	0.075	11.9
2.	B1	0.3	960	0.075	12.65
3.	B1	0.3	945	0.075	12.12
4.	B2	0.3	1015	0.075	13.2
5.	B2	0.3	1057	0.075	13.46
6.	B2	0.3	1079	0.075	14.34
7.	B3	0.3	1093	0.075	14.58
8.	B3	0.3	1109	0.075	14.28
9.	B3	0.3	1129	0.075	14.78

**Tensile Test**

SR. No.	Sample	Weight (kg)	Load (kn)	Area (m <sup>2</sup> )	Max Tensile load (kg)
1	B1	0.3	852	0.075	81.6
2	B1	0.3	1001	0.075	99.8
3	B1	0.3	1029	0.075	103.4
4	B2	0.3	1034	0.075	102.0
5	B2	0.3	1038	0.075	104.5
6	B2	0.3	1106	0.075	110.7
7	B3	0.3	1192	0.075	112.2
8	B3	0.3	1287	0.075	114.4
9	B3	0.3	1167	0.075	108.1

#### Flexural test

At concrete canvas is flexible and after curing the concrete canvas transforms into semi rigid state. i.e the concrete canvas failed in Flexural test

#### Permeability test

As the concrete canvas has PVC sheet backing, It was observed that there was no leakage or penetration of water through the concrete canvas sheet.

### IV. CONCLUSION

- From the test performed on concrete canvas conclude that By adding 20% GGBS to cement, sand mix, the compressive strength of concrete canvas increase with increase in cement content.
- The maximum compressive strength of concrete canvas is obtained from mix of (cement+GGBS) of 15N/mm<sup>2</sup> with greatest tensile load carrying capacity of 111.6 kg.
- As the compressive strength of concrete canvas is equivalent to 15n/mm<sup>2</sup> as compared to conventional concrete of grade M10 and M15 for canal and ditch lining is same but due to high tensile strength and flexibility the concrete canvas is better option to use.
- Due to gaining of high strength at early state. Concrete canvas can be used making temporary shelter, sand bag reinforcements and for Slope protection.
- Concrete canvas is comparatively more economical then conventional concrete due to easy installation, less manpower required, less curing period and low maintenance, and easy repair work.

### V. REFERENCE

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