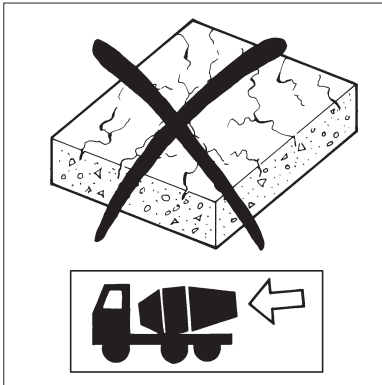


## Product



- THIS DETAIL SHEET RELATES TO FIBERMESH 300, 19 MM, COLLATED FIBRILLATED POLYPROPYLENE FIBRES.
- This Detail Sheet covers its use in concrete at an addition rate of  $0.9 \text{ kgm}^{-3}$ .
- Fibermesh 300 was formerly known as Fibermesh Inforce.

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations, general information relating to the product, and the Conditions of Certification.

## Technical Specification

### 1 Description

Fibermesh 300 consists of 19 mm, collated fibrillated polypropylene fibres and is used to control the extent of plastic shrinkage cracking and plastic settlement in concrete. It may be used in all situations including external floor slabs.

## Technical Investigations

The following is a summary of the technical investigations carried out on Fibermesh 300.

### 2 Tests

2.1 Tests were conducted using the mix designs given in Table 1.

Table 1 Test mix designs<sup>(1)</sup>

Component	Quantity ( $\text{kgm}^{-3}$ )	
	Mix 1	Mix 2
Portland cement (to BS 12, class 42.5N)	317 <sup>(2)</sup>	325 <sup>(2)</sup>
Water	212	— <sup>(3)</sup>
Sand (5 mm)	827	799
Gravel (5 mm to 20 mm)	1070	1149
Fibermesh 300 fibres	0.90	0.90

(1) Plain concrete control mixes were the same but did not include the fibres.

(2) Typical cement content used in concrete floor slab construction.

(3) Sufficient to achieve a slump of  $65 \pm 25$  mm.

2.2 At the rate of addition covered in this Detail Sheet, a test mix met the requirements of BS 5075-2 : 1982 for freeze/thaw resistance (50 cycles).

2.3 Results of the plastic and hardened concrete tests are summarised in Tables 2 and 3.

Table 2 Plastic concrete test results

Test (units)	Method <sup>(1)</sup>	Mix design	Results	
			Fibermesh 300 concrete	Plain concrete
Air content (%)	BS 1881-106	1	1.5	1.1
Slump (mm)	BS 1881-102	1	60 to 65	65
Compacting factor	BS 1881-103	1	0.98	0.93
Distribution of fibres	Visual examination	1	well distributed	not applicable
Bleeding rate ( $\text{ml cm}^{-2}$ )	ASTM C 232-71	2	0.81	1.25
Flow (mm)	BS 1881-105	1	380	410
Change in height (%)	ASTM C 827-87	1	-0.742	-1.01
Resistance to plastic cracking of rings (mean crack width) (mm)	FCB (Trondheim, Norway) test specification	1	0.51	2.59
Resistance to plastic cracking of slabs (crack area) ( $\text{mm}^2$ )	Modified Kraai test specification	1	37	219

(1) Test documents are detailed in the Bibliography.

Table 3 Hardened concrete test results

Test (units)	Method <sup>(1)</sup>	Mix design	Results	
			Fibermesh 300 concrete	Plain concrete
Initial surface absorption test (mlm <sup>-2</sup> s <sup>-1</sup> )	BS 1881-5 (65 mm thick slab non-crazed area)	1		
air dried				
10 min			1.09	0.87
120 min			0.47	0.41
water cured				
10 min			0.57	0.56
120 min	0.11	0.12		
Permeability of cores (mlm <sup>-2</sup> s <sup>-1</sup> )	Covercrete Absorption Test (Dundee University Specification)	1	0.83	0.86
Water absorption (%)	BS 1881-122	1	4.49	3.88
Impact resistance (blows to first crack)	ASTM D 1557-87	2	11.1 (28 days)	8.8 (28 days)
Distribution of fibres	microscopic examination	2	well distributed	not applicable
Flexural strength (Nmm <sup>-2</sup> ) (beams)	BS 1881-118	1	Mean	Mean
1 day			2.3	2.3
3 days			4.0	3.5
7 days			4.6	4.6
28 days			5.6	5.1
Compressive strength (Nmm <sup>-2</sup> ) (equivalent cube method)	BS 1881-119	1	Mean	Mean
1 day			16.5	16.0
3 days			28.5	24.0
7 days			34.0	35.0
28 days			43.5	39.5
Cube compressive strength (Nmm <sup>-2</sup> )	BS 1881-116	1	Mean	Mean
1 day			16.0	14.5
3 days			28.0	27.5
7 days			34.0	36.0
28 days			48.5	44.5
Freeze/thaw resistance <sup>(2)</sup> (after 50 cycles)	BS 5075-2	see footnote (2)		
% change in length			0.05	0.28
Surface hardness	BS 1881-202 (rebound hammer)	1	29	28
Abrasion resistance reduction in rate of abrasion (%)	A'Court BS 784	1	13	—

(1) Test documents are detailed in the *Bibliography*.

(2) Mix design to specification given in BS 5075-2 : 1982.

## Bibliography

BS 12 : 1991 *Specification for Portland cement*

BS 784 : 1953 *Methods of test for chemical stoneware*

BS 1881-5 : 1970 *Testing concrete — Methods of testing hardened concrete for other than strength*

BS 1881-102 : 1983 *Testing concrete — Methods for determination of slump*

BS 1881-103 : 1993 *Testing concrete — Method for determination of compacting factor*

BS 1881-105 : 1984 *Testing concrete — Method for determination of flow*

BS 1881-106 : 1983 *Testing concrete — Methods for determination of air content of fresh concrete*

BS 1881-116 : 1983 *Testing concrete — Method for determination of compressive strength of concrete cubes*

BS 1881-118 : 1983 *Testing concrete — Method for determination of flexural strength*

BS 1881-119 : 1983 *Testing concrete — Method for determination of compressive strength using portions of beams broken in flexure (equivalent cube method)*

BS 1881-122 : 1983 *Testing concrete — Method for determination of water absorption*

BS 1881-202 : 1986 *Testing concrete — Recommendations for surface hardness testing by rebound hammer*

BS 5075-2 : 1982 *Concrete admixtures — Specification for air-entraining admixtures*

ASTM C 232-71 *Standard Test Methods for Bleeding of Concrete*

ASTM C 827-87 *Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures*

ASTM D 1557-87 (Reapproved 1990) *Standard Test Methods for Moisture Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 kg) Rammer and 18 in (457 mm) Drop*



On behalf of the British Board of Agrément

Date of Fourth issue: 16th June 2006

Chief Executive

\*Original Detail Sheet issued 5th July 1993. This amended version includes changes of product and company name.

