

## TEST REPORT

**TEST NO.:** 2008/105 – p08-054/RC&SM

**Date test report:** 2008-03-31

**Date receipt of**

**the materials:** 2008-02-29

**FOR ACCOUNT OF:**

PolySto B.V.B.A.  
Schoenstraat 19  
9140 TEMSE (BELGIË)

**ORIGIN:** /

**Origin of the material:** Cylindrical test specimens in polyester concrete

**Marks:** /

**ON DEMAND OF:**

Mr. Alex Moreels

### TESTS ON POLYESTER CONCRETE

On 2008-02-29, 6 cylindrical test specimens with a nominal diameter of 150 mm and a nominal height of 300 mm are delivered to the Magnel Laboratory for Concrete Research in order to determine:

1. the compressive strength of 3 cylindrical test specimens
2. the splitting tensile strength of 4 cylindrical test specimens
3. the modulus of elasticity of 1 cylindrical test specimen

For the determination of the compressive strength and the modulus of elasticity, cylindrical test specimens with a nominal length to diameter ratio of 2 are used. This is consistent with the delivered test specimens. The surfaces are leveled by means of a diamant grinding disc.

For the determination of the tensile splitting strength, cylindrical test specimens with a nominal length to diameter ratio of 1 are used. The delivered test specimens are sawn in 2 by wet diamante sawing in order to obtain a nominal height of 150 mm.

The test specimens are stored at laboratory ambient conditions. All tests are performed on 2008-03-17.

#### 1. COMPRESSIVE TESTS

The compression tests are performed following NBN EN 12390-3 on 3 cylindrical test specimens with a nominal height of 300 mm and a nominal diameter of 150 mm. The results are given in Table 1.

TABLE 1

Specimen designation	Dimensions (mm) Ø x h	Mass air-dry (kg)	Density air-dry (kg/m <sup>3</sup> )	Maximum load (kN)	Compressive strength (N/mm <sup>2</sup> )
1	149,4 x 294,8	10,781	2086	1332	76,0
2	150,1 x 296,2	10,883	2076	1358	76,7
3	149,3 x 295,9	10,695	2065	1331	76,0

## 2. TENSILE SPLITTING TESTS

The tensile splitting tests are performed following NBN B15-218 on 4 cylindrical test specimens with a nominal height of 150 mm and a nominal diameter of 150 mm. The results are given in Table 2. All test specimens fail according to the splitting plane imposed by the test.

TABLE 2

Specimen designation	Dimensions (mm) Ø x h	Mass air-dry (kg)	Density air-dry (kg/m <sup>3</sup> )	Maximum load (kN)	Tensile splitting strength (N/mm <sup>2</sup> )
A	148,5 x 147,8	5,406	2112	315	9,1
B	148,7 x 148,6	5,368	2080	360	10,4
C	149,0 x 148,5	5,459	2108	340	9,8
D	148,7 x 147,8	5,389	2098	355	10,3

## 3. TEST IN ORDER TO DETERMINE THE MODULUS OF ELASTICITY

The test in order to determine the modulus of elasticity is performed according to NBN B15-203 on 1 cylindrical test specimen with a nominal height of 300 mm and a nominal diameter of 150 mm.

On the air-dry specimen a displacement controlled compression test is performed during which the load-strain diagram is recorded. The strain of the test specimen is measured directly, using 3 strain gauges. After a preparation cycle, 3 load cycles are performed, after which the load is increased until failure of the specimen.

Based on the last 2 load cycles, the calculated secansmodulus of elasticity (following NBN B15-203) is 22537 N/mm<sup>2</sup>. The maximum load is 1190 kN or 67,7 N/mm<sup>2</sup>. The measurements were terminated at a strain of  $9000 \times 10^{-6}$ . The load-strain curve of the electronic measurements is given in Figure 1.

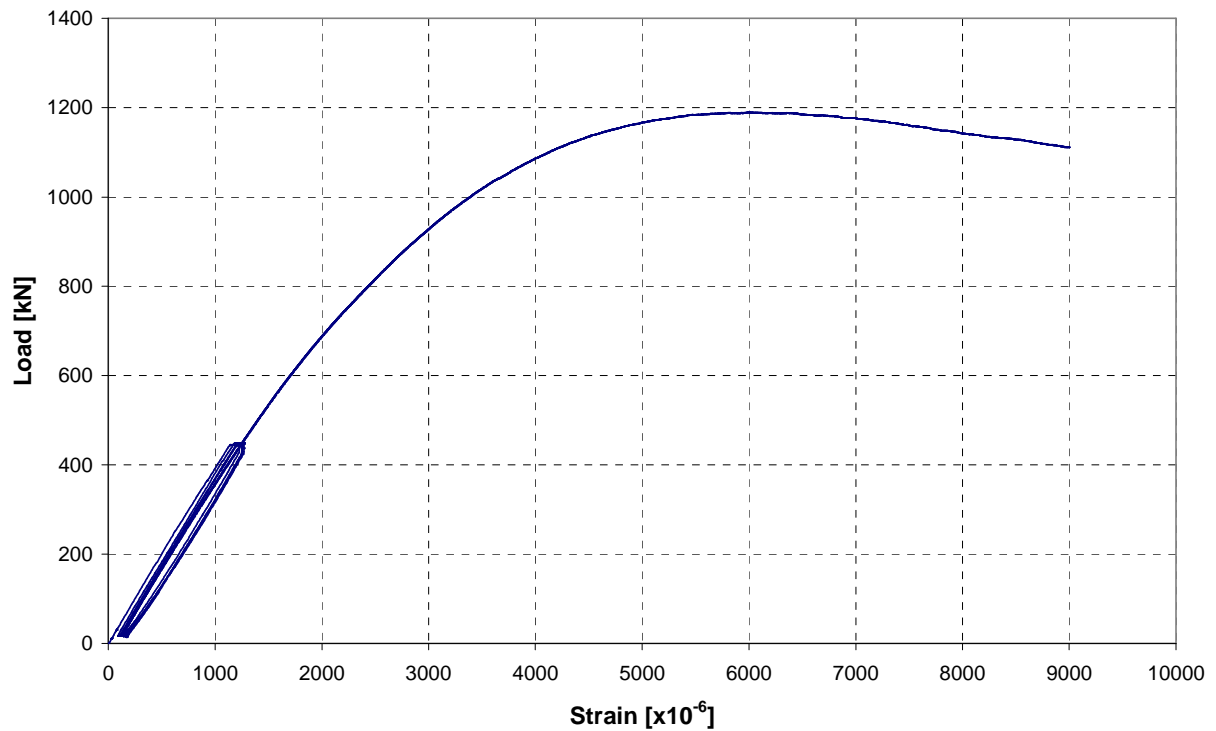


Figure 1: Load-strain curve of the test in order to determine the modulus of elasticity

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