



**SGS United Kingdom Ltd.**  
Construction Services Division

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Tecroc Products Limited  
Holly Lane Industrial Estate  
Atherstone  
Warwickshire  
CV9 2RN

Report No. EMM7764

Date of Report: 2nd April 1997

For the attention of Mr Stuart Sadler

REPORT FOR THE TESTING OF TECGROUT CS  
BATCH NO.765 TO DETERMINE COMPLIANCE WITH  
THE SPECIFICATION FOR HIGHWAY WORKS, CLAUSE 2601

1.0 Introduction and Background

SGS United Kingdom Limited, are pleased to submit this report in relation to the above. Testing was requested by your Mr S Sadler under your official order number 6770 and executed between 26th March 1997 and 2nd May 1997 by our Mr R Gould and Mr D Swindells.

2.0 Scope of Works

As requested SGS United Kingdom Ltd., performed the following scope of work:

- a. Flow Cone at 5°C and 20°C
- b. Flow between Glass Plates at 5°C and 20°C
- c. Compressive Strength
- d. Early Expansion
- e. Elastic Stability

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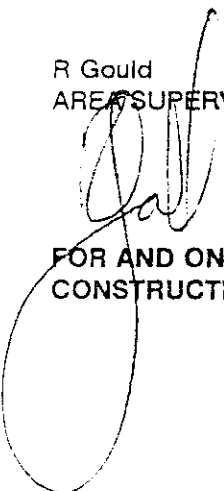
### 3.0 Results

Summarised test results are presented below:

1. Flow at 20°C - 66.4 seconds
2. Flow at 5°C - 86.0 seconds
3. Flow between Glass Plates 20°C - Positive
4. Flow between Glass Plates 5°C - Positive
5. Compressive Strength - 77.5 N/mm<sup>2</sup>
6. Early Expansion + 1.52%
7. Elastic Stability - 0.16%

Detailed test results are presented in Appendix A.

R Gould  
AREA SUPERVISOR



FOR AND ON BEHALF OF SGS UNITED KINGDOM LIMITED  
CONSTRUCTION SERVICES DIVISION

CERTIFICATE OF TEST ON CEMENTITIOUS MIXTURES  
(FLOW CONE METHOD)  
ASTM C939-87

CLIENT: Tecroc Products Ltd REPORT NO: EMM7764  
SAMPLE REF: Tecgrout CS Batch No.765 SGS REF: 97/228  
MIX LOCATION: Sheffield Lab. DATE: 26/3/97  
WATER/ADDITION: 4.5 ltrs. OPERATOR: D Swindells  
TEST METHOD: 20°C Cone

CALIBRATION OF THE CONE

Time of Efflux of 1.725 ltrs of Water - (8.0 ± 0.2 Seconds) 8.04 seconds  
Time of Mix: 9.54  
Scale I.D: 905/100  
Stopwatch I.D: 905/170  
Operator: D Swindells

TESTING

	Test 1	Test 2
Temperature of Cone	20°C	20°C
Temperature of Water	20°C	20°C
Temperature of Dry Material	20°C	20°C
Ambient Temperature	20°C	20°C
Grout Temperature	22°C	22°C
Time of Test	9.57	9.58
Time of Efflux (No more than 5% difference)	65.54	67.12

RESULT

**Average Time of Efflux - 66.4 seconds**  
(nearest 0.2 seconds)



CERTIFICATE OF TEST ON CEMENTITIOUS MIXTURES  
(FLOW CONE METHOD)  
ASTM C939-87

CLIENT: Tecroc Products Limited REPORT NO: EMM7764  
SAMPLE REF: Tecgrout CS Batch No.765 SGS REF: 97/228  
MIX LOCATION: Sheffield Lab. DATE: 26/3/97  
WATER/ADDITION: 4.5 ltrs. OPERATOR: D Swindells  
TEST METHOD: 5°C Cone

CALIBRATION OF THE CONE

Time of Efflux of 1.725 ltrs of Water - (8.0 ± 0.2 Seconds) 8.04 seconds  
Time of Mix: 10.22  
Scale I.D: 905/100  
Stopwatch I.D: 905/170  
Operator: D Swindells

TESTING

	Test 1	Test 2
Temperature of Cone	7°C	7°C
Temperature of Water	20°C	20°C
Temperature of Dry Material	10°C	10°C
Ambient Temperature	7°C	7°C
Grout Temperature	15°C	15°C
Time of Test	10.26	10.28
Time of Efflux (No more than 5% difference)	85.38	86.91

RESULT

**Average Time of Efflux - 86.0 seconds**  
(nearest 0.2 seconds)



CERTIFICATE OF TEST ON CEMENTITIOUS MIXTURES  
DETERMINATION OF THE FLOW BETWEEN GLASS PLATES

Client:	Tecroc Products Limited	Report No:	EMM7764
Site:	Ex Works	Technician:	D Swindells
Material:	Tecgrout CS Batch No.765	Date:	26/3/97
Water Addition:	4.5 ltrs per bag		

20°C

The flow between glass plates was positive when tested at 20°C with no indication of voids, bleeding or segregation.

5°C

The flow between glass was positive when tested at 5°C with no indication of voids, bleeding or segregation.

## TEST CERTIFICATE FOR CONCRETE CUBES

Cured to BS 1881:Part III:1983. Tested to BS1881:Parts 114,116:1983

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 Issued 23/04/97

REPORTS TO: H.O. ( 1 of 1 )

SITE ADDRESS

 Tecro Products Limited  
 Holly Lane Industrial Estate  
 Atherstone  
 Warwickshire, CV9 2RN

 Tecro Products Limited  
 TECROC

LABORATORY:	East Midlands
JOB REFERENCE:	EM 7243 (905055781)
DATE CAST:	26/03/97
DATE RECEIVED:	26/03/97
DATE TESTED:	23/04/97
TEST AGE:	28 Days

Information supplied by the client
MIX: Tecgrout CS Batch No 765 4.5 Litres Water
LOCATION: Sheffield Laboratory

Details of non-standard curing:-	Date	Duration	Range	/
Availability of BS1881 Certificate of:-	Sampling	No	Preparation No	Curing No

Clients sample reference	Nominal size or dimensions if more than 1% outside	Mass g	Density kg/m <sup>3</sup>	Max load at failure kN	Compressive Strength N/mm <sup>2</sup>	Our sample reference	Comments See codes below
B765 A	70.7	782	2210	398	79.5	T5214	
B765 B	70.7	776	2200	385	77.0	T5215	
B765 C	70.7	776	2200	382	76.5	T5216	
B765 D	70.7	782	2210	385	77.0	T5217	
B765 E	70.7	777	2200	386	77.0	T5218	
B765 F	70.7	776	2200	390	78.0	T5219	

FAILED CUBES WILL ONLY BE RETAINED FOR 10 DAYS AFTER TEST

Additional Information

Authorisation R Gould

 checked



### Addresses of SGS NAMAS Accredited Construction Services Laboratories

0264	MIDLANDS & H.O.	SGS House, Johns Lane, Tividale, W. Mids. B69 3HX.	Tel: (0121) 557 0844
0266	NORTH WEST	Unit 10, Berkeley Court, Manor Park, Runcorn, Cheshire, WA7 1TQ.	Tel: (01928) 579044
0265	YORKSHIRE & EAST MIDLANDS	Provincial Park, Nether Lane, Ecclesfield, Sheffield, S30 3XT.	Tel: (0114) 240 1901

**COMMENTS**

1. Cubes received wet
2. Cubes received dry
3. Corners chipped
4. Edges chipped
5. Poor compaction
6. Honeycombed
7. Surface air voids
8. Exposed aggregate
9. Signs of frost attack
10. Rough faces
11. Projecting fins removed by carbonadium stone

12. Abnormal mode of failure (part 116, set 16 fig. 1-9)
13. Concrete stony
14. Concrete sandy
15. Concrete variable
16. Test condition moist
17. Mass determined as received
18. Density determined as received
19. Volume determined by BS 1881:Part 114:Section 7
20. Cube out of square
21. Cube unsuitable for test
22. Cube retained for inspection

**UNLESS OTHERWISE NOTED THE FOLLOWING APPLY**

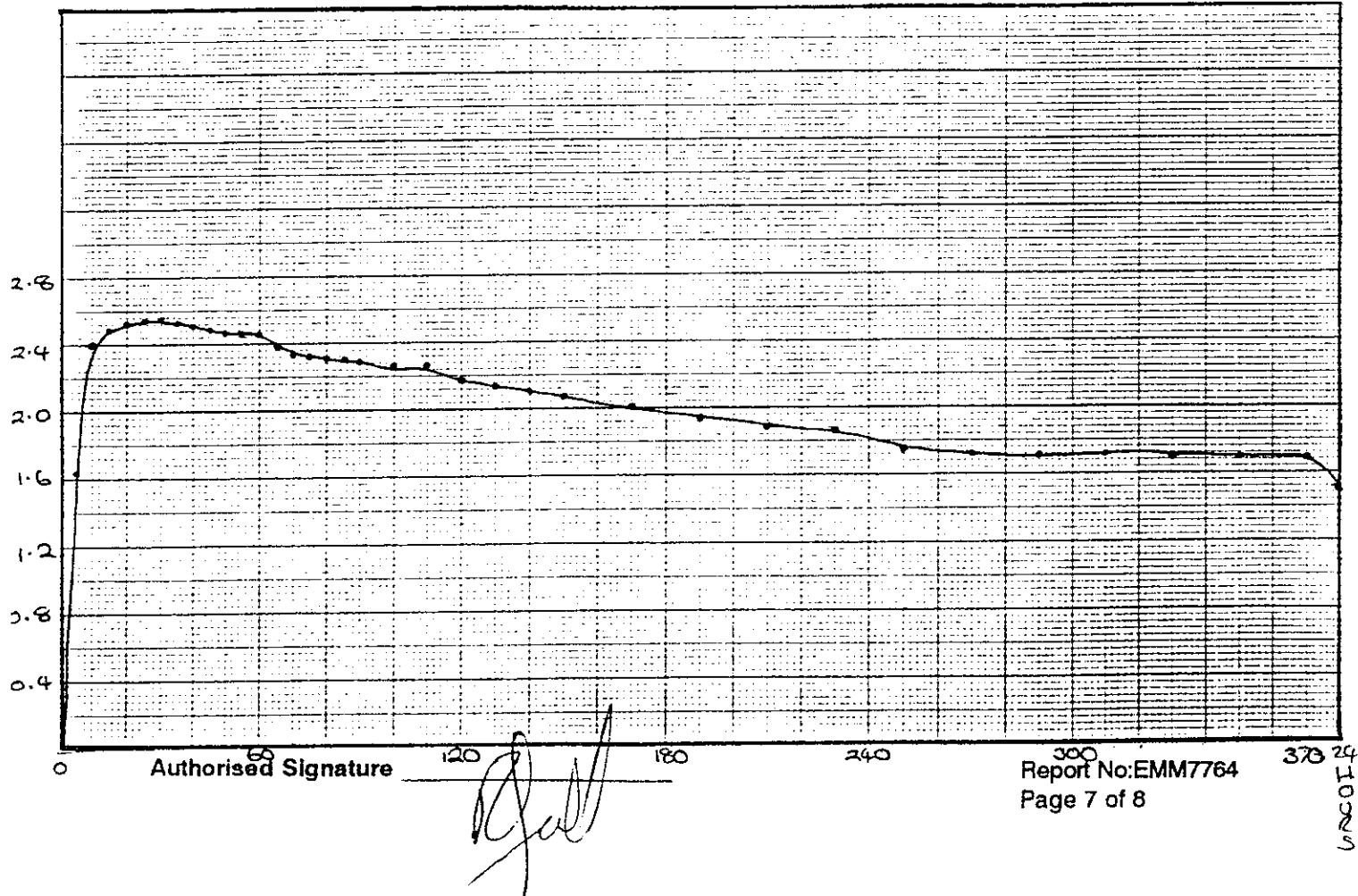
- \* Normal mode of failure
- \* Test conditions saturated
- \* Mass and density at test saturated
- \* Volume determined by section 9 BS 1881:Part 114
- \* Storage curing and testing in accordance with BS 1881:1983
- When curing temperatures vary from the standard (e.g. during the regular water changes required by BS 1881) this will be reported.

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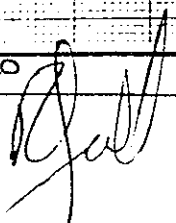
**CERTIFICATE OF TEST ON CEMENTITIOUS MIXTURES**  
**EARLY EXPANSION ASTM C827-87**

CLIENT:	Tecroc Products Ltd	REPORT NO:	EMM7764
SAMPLE REFERENCE:	Tecgrout CS Batch No. 765	SGS REF:	97/228
WATER ADDITION:	4.5 ltrs	DATE:	28/3/97
TEST METHOD:	100mm mould	OPERATOR:	D Swindells

Flow (ASTM C939-87):	66.4 seconds
Magnification:	97
Temperature of Mix:	22°C
Ambient Temperature @ Mixing:	20°C
Ambient Temperature During Test:	20°C
Relative Humidity During Test:	47-49%
Time Between Start of Mixing and Testing:	1 minute
Maximum Change in height:	+2.56%
Change in Height at Hardening of Mixture:	+1.76%
Change in Height at Conclusion of Test:	+1.52%



Authorized Signature



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370 24 HOURS



# CERTIFICATE OF TEST ON CEMENTITIOUS MIXTURES

## Determination of Elastic Stability at 45°C

**Material:** Tecgrout CS                      **Report No:** EMM7764  
Batch No. 765

**Client:** Tecroc Products Limited

Date Cast        -        28th March 1997

Date Tested     -        1st May 1997

Size of Cubes   -        70.7mm

Cube 1           -        0.17%

Cube 2           -        0.15%

Cube 3           -        0.15%

Mean            -        0.16%

Note: This Test requirement was sub-contracted by SGS to another Laboratory