

## Test Report

### Tensile Test of Fiber Reinforced Polymer (FRP) Materials

### Longitudinal Tensile Properties of FRP Bars

Report Number : J04Q3402	Job Number : 6143 5111
Location of Test : FT Laboratories Limited	
Test Machine : Universal Testing Machine (Ref. No: PHY/26)	Date Received : 01-Sep-14
Type of Specimen : Circular Section	Test Date : 04-Sep-14
Test Method Used : ACI 440.3R-04 Clause B.2	Test Temperature : 24 °C

**\*\* Information Provided By Customer:**

Customer : Dextra Pacific Limited	
Address : Suite 1901 Tung Wai Commercial Building, 109 Gloucester Road, Hong Kong	
Project : ASTEC	
Manufacturer : Dextra	Date of Manufacturer : -
Shape : -	Lot Number : -
Type of Fiber : Glass of Fiber Reinforced Polymer (GFRP)	Nominal Bar Diameter : 16 mm
Guaranteed Tensile Strength : - MPa	Equivalent Bar Diameter : 15.921 mm
	Equivalent Cross Sectional Area : 199.092 mm <sup>2</sup>

**Test Result:**

Laboratory Reference Number	Customer's Sample Number	Longitudinal Modulus of Elasticity $E_L$ (MPa)	Ultimate Tensile Capacity $F_u$ (kN)	Ultimate Tensile Strength $f_u$ (MPa)	Ultimate Strain $\epsilon_u$ (%)	Location of Failure	Result
FT140255/T1	GR45T-16	49	148	743	0.015	Fiber Breakage	-
FT140255/T2	GR45T-16	51	164	824	0.016	Fiber Breakage	-
FT140255/T3	GR45T-16	51	148	743	0.015	Fiber Breakage	-
FT140255/T4	GR45T-16	48	148	743	0.015	Fiber Breakage	-
FT140255/T5	GR45T-16	50	160	804	0.016	Fiber Breakage	-
FT140255/T6	GR45T-16	47	137	688	0.015	Fiber Breakage	-
Mean:		49	151	758	0.015		
Standard Deviation:		1.6	9.7	49.1	0.0007		

Remarks : -

Tested By \_\_\_\_\_

Name : CHONG Wai Man

Date : \_\_\_\_\_

Certified By \_\_\_\_\_

MAK Yan Leong  
 Name :  YUE Wai Chun

Date : \_\_\_\_\_

**Note:**

This reports shall not be reproduced, except in full, without the written approval of FT Laboratories Limited.  
 While this report has been prepared based on information provided by the client, whether verbally or in writing, we accept no liability for any loss or whatsoever which may arise from any use of this report or any part thereof whether or not due to errors in the report or the information on which the report has been based.

## Test Report

### Tensile Test of Fiber Reinforced Polymer (FRP) Materials

### Longitudinal Tensile Properties of FRP Bars

Report Number : J04Q3402	Job Number : 6143 5111
Location of Test : FT Laboratories Limited	
Test Machine : Universal Testing Machine (Ref. No: PHY/26)	Date Received : 01-Sep-14
Type of Specimen : Circular Section	Test Date : 04-Sep-14
Test Method Used : ACI 440.3R-04 Clause B.2	Test Temperature : 24 °C

**\*\* Information Provided By Customer:**

Customer : Dextra Pacific Limited	
Address : Suite 1901 Tung Wai Commercial Building, 109 Gloucester Road, Hong Kong	
Project : ASTEC	
Manufacturer : Dextra	Date of Manufacturer : -
Shape : -	Lot Number : -
Type of Fiber : Glass of Fiber Reinforced Polymer (GFRP)	Nominal Bar Diameter : 25 mm
Guaranteed Tensile Strength : - MPa	Equivalent Bar Diameter : 25.077 mm
	Equivalent Cross Sectional Area : 493.901 mm <sup>2</sup>

**Test Result:**

Laboratory Reference Number	Customer's Sample Number	Longitudinal Modulus of Elasticity $E_L$ (MPa)	Ultimate Tensile Capacity $F_u$ (kN)	Ultimate Tensile Strength $f_u$ (MPa)	Ultimate Strain $\epsilon_u$ (%)	Location of Failure	Result
FT140255/T7	GR45T-25	52	361	731	0.014	Fiber Breakage	-
FT140255/T8	GR45T-25	49	352	713	0.015	Fiber Breakage	-
FT140255/T9	GR45T-25	48	342	692	0.014	Fiber Breakage	-
FT140255/T10	GR45T-25	48	371	751	0.016	Fiber Breakage	-
FT140255/T11	GR45T-25	48	355	719	0.015	Fiber Breakage	-
FT140255/T12	GR45T-25	51	358	725	0.014	Fiber Breakage	-
Mean:		49	357	722	0.015		
Standard Deviation:		1.8	9.6	19.6	0.0006		

Remarks: -

**Note:**

This reports shall not be reproduced, except in full, without the written approval of FT Laboratories Limited.  
 While this report has been prepared based on information provided by the client, whether verbally or in writing, we accept no liability for any loss or whatsoever which may arise from any use of this report or any part thereof whether or not due to errors in the report or the information on which the report has been based.

## Test Report

### Tensile Test of Fiber Reinforced Polymer (FRP) Materials

### Longitudinal Tensile Properties of FRP Bars

Report Number : J04Q3402	Job Number : 6143 5111
Location of Test : FT Laboratories Limited	
Test Machine : Universal Testing Machine (Ref. No: PHY/26)	Date Received : 01-Sep-14
Type of Specimen : Circular Section	Test Date : 04-Sep-14
Test Method Used : ACI 440.3R-04 Clause B.2	Test Temperature : 24 °C

**\*\* Information Provided By Customer:**

Customer : Dextra Pacific Limited	
Address : Suite 1901 Tung Wai Commercial Building, 109 Gloucester Road, Hong Kong	
Project : ASTEC	
Manufacturer : Dextra	Date of Manufacturer : -
Shape : -	Lot Number : -
Type of Fiber : Glass of Fiber Reinforced Polymer (GFRP)	Nominal Bar Diameter : 32 mm
Guaranteed Tensile Strength : - MPa	Equivalent Bar Diameter : 32.975 mm
	Equivalent Cross Sectional Area : 853.978 mm <sup>2</sup>

**Test Result:**

Laboratory Reference Number	Customer's Sample Number	Longitudinal Modulus of Elasticity $E_L$ (MPa)	Ultimate Tensile Capacity $F_u$ (kN)	Ultimate Tensile Strength $f_u$ (MPa)	Ultimate Strain $\epsilon_u$ (%)	Location of Failure	Result
FT140255/T13	GR45T-32	51	626	733	0.014	Fiber Breakage	-
FT140255/T14	GR45T-32	53	629	737	0.014	Fiber Breakage	-
FT140255/T15	GR45T-32	50	642	752	0.015	Fiber Breakage	-
FT140255/T16	GR45T-32	51	641	751	0.015	Fiber Breakage	-
FT140255/T17	GR45T-32	50	617	723	0.014	Fiber Breakage	-
FT140255/T18	GR45T-32	51	642	752	0.015	Fiber Breakage	-
Mean:		51	633	741	0.015		
Standard Deviation:		1.1	10.5	12.2	0.0004		

Remarks: -

**Note:**

This reports shall not be reproduced, except in full, without the written approval of FT Laboratories Limited.  
 While this report has been prepared based on information provided by the client, whether verbally or in writing, we accept no liability for any loss or whatsoever which may arise from any use of this report or any part thereof whether or not due to errors in the report or the information on which the report has been based.