

Muhammad Shafeeq  
CFO, INDIGO Developers, Lahore

Test Performed By: Dr. /Engr. Nauman Khurram

Client Reference: Nil

SOM Lab

Ref: 3346(Page-1/1)

Dated: 30-11-2020

Dated: 01-12-2020

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Deformed

Gauge Length: 8 inch

Sample Type:

Bar

S.No.	Weight	Dia.		Area		Yield Load	Ultimate Load	Yield Stress		Ult. Stress		Elongation	Gauge Length	%age Elongation	Remarks
		Nominal	Calculated	Nominal	Calculated			(according to nominal area)	(according to measured area)	(according to nominal area)	(according to measured area)				
	lb/ft	#	in	in <sup>2</sup>	in <sup>2</sup>	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	2.635	8	0.993	0.79	0.774	25.05	31.98	69920	71370	89270	91120	1.50	8.0	18.8	
2	2.644	8	0.995	0.79	0.777	24.67	31.75	68870	70020	88650	90130	1.40	8.0	17.5	
3	0.624	4	0.483	0.20	0.183	6.27	8.48	69130	75560	93530	102210	1.10	8.0	13.8	
4	0.662	4	0.498	0.20	0.195	5.81	8.10	64080	65720	89370	91660	1.10	8.0	13.8	
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**BEND TEST:**

# 8	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-</b>  <b>Only Six Samples Received and Tested</b>
# 4	Sample bend through 180 degrees Satisfactorily without any crack	

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Abdullah Muhammad Khadim  
Resident Engineer, DAR Engineering

Test Performed By: Dr. /Engr.

S. Asad Ali  
Gillani

Client Reference: DB-78/DAR/RE/ME/2018/0245

SOM Lab

Ref: 3347(Page-1/1)

Dated: 01-12-2020

Dated: 01-12-2020

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Deformed Bar(Kamran  
Steel)

Gauge Length: 8 inch

Sample Type:

S.No.	Weight	Dia.		Area		Yield Load	Ultimate Load	Yield Stress		Ult. Stress		Elongation	Gauge Length	%age Elongation	Remarks
		Nominal	Calculated	Nominal	Calculated			(according to nominal area)	(according to measured area)	(according to nominal area)	(according to measured area)				
	lb/ft	#	in	in <sup>2</sup>	in <sup>2</sup>	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	1.519	6	0.754	0.44	0.446	13.61	19.54	68210	67300	97950	96630	1.30	8.0	16.3	
2	1.521	6	0.754	0.44	0.447	13.46	19.44	67450	66390	97440	95910	1.40	8.0	17.5	
3	1.076	5	0.634	0.31	0.316	11.42	14.44	81230	79680	102760	100810	1.10	8.0	13.8	
4	1.071	5	0.633	0.31	0.315	11.52	14.53	81950	80650	103340	101700	1.10	8.0	13.8	
5	0.688	4	0.507	0.20	0.202	6.93	9.65	76440	75680	106450	105400	1.00	8.0	12.5	
6	0.686	4	0.507	0.20	0.202	6.42	9.12	70820	70120	100610	99610	1.00	8.0	12.5	
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**BEND TEST:**

# 6	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-</b>  <b>Only Nine Samples Received and Tested</b>
# 5	Sample bend through 180 degrees Satisfactorily without any crack	
# 4	Sample bend through 180 degrees Satisfactorily without any crack	

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Muhammad Waris Jan  
Sr. Engineer (Welding & NDT) EKL (Pvt) Ltd. Lahore

Test Performed By: Dr. /Engr.

S Asad Ali  
Gillani

Client Reference: Nil

Dated: 18-11-2020

Test: Tension Test & Bend Test

Test Specification:

SOM Lab

Ref: 3349(Page-1/1)

Dated: 01-12-2020

ASTM-A-615

Deformed

Bar

Gauge Length: 8 inch

Sample Type:

S.No.	Weight	Dia.		Area		Yield Load	Ultimate Load	Yield Stress		Ult. Stress		Elongation	Gauge Length	%age Elongation	Remarks
		Nominal	Calculated	Nominal	Calculated			(according to nominal area)	(according to measured area)	(according to nominal area)	(according to measured area)				
	lb/ft	#	in	in <sup>2</sup>	in <sup>2</sup>	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	1.510	6	0.752	0.44	0.444	13.68	18.93	68570	67950	94880	94030	1.10	8.0	13.8	
2	0.999	5	0.612	0.31	0.294	10.77	14.63	76660	80830	104070	109730	1.20	8.0	15.0	
3	0.594	4	0.472	0.20	0.175	5.93	6.95	65420	74770	76660	87620	1.00	8.0	12.5	
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**BEND TEST:**

# 6	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-</b>  <b>Only Six Samples Received and Tested</b>
# 5	Sample bend through 180 degrees Satisfactorily without any crack	
# 4	Sample bend through 180 degrees Satisfactorily without any crack	

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Maqsood Ahmad  
Executive Engineer, State Bank of Pakistan, Sialkot

Test Performed By: Dr. /Engr.

S. Asad Ali  
Gillani

Client Reference: 0894-82/SKT-NB/2020

SOM Lab

Ref: 3350(Page-1/1)

Dated: 26-11-2020

Dated: 01-12-2020

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Deformed

Gauge Length: 8 inch

Sample Type:

Bar

S.No.	Weight	Dia.		Area		Yield Load	Ultimate Load	Yield Stress		Ult. Stress		Elongation	Gauge Length	%age Elongation	Remarks
		Nominal	Calculated	Nominal	Calculated			(according to nominal area)	(according to measured area)	(according to nominal area)	(according to measured area)				
	lb/ft	#	in	in <sup>2</sup>	in <sup>2</sup>	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	1.491	6	0.747	0.44	0.438	16.53	20.49	82880	83260	102700	103170	1.30	8.0	16.3	
2	1.478	6	0.743	0.44	0.434	16.26	20.13	81500	82620	100910	102310	1.20	8.0	15.0	
3	0.660	4	0.497	0.20	0.194	7.05	8.56	77790	80190	94420	97340	1.00	8.0	12.5	
4	0.661	4	0.497	0.20	0.194	6.93	8.41	76440	78800	92740	95610	1.00	8.0	12.5	
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**BEND TEST:**

# 6	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-</b>  <b>Only Six Samples Received and Tested</b>
# 4	Sample bend through 180 degrees Satisfactorily without any crack	

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Muhammad Rabi Yousaf  
Chughtai  
GE (Navy) Lahore

Test Performed By: Dr. /Engr. Nauman Khurram

Client Reference: 6021/152/36/E-6

SOM Lab Ref: 3351(Page-1/1)

Dated: 01-12-2020

Dated: 01-12-2020

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Guage Length: 8 inch

Sample Type:

Deformed Bar

S.No.	Weight	Dia.		Area		Yield Load	Ultimate Load	Yield Stress		Ult. Stress		Elongation	Gauge Length	%age Elongation	Remarks
		Nominal	Calculated	Nominal	Calculated			(according to nominal area)	(according to measured area)	(according to nominal area)	(according to measured area)				
	lb/ft	#	in	in <sup>2</sup>	in <sup>2</sup>	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	1.481	6	0.744	0.44	0.435	13.71	21.51	68730	69510	107810	109050	1.20	8.0	15.0	G-60
2	1.490	6	0.747	0.44	0.438	13.48	21.41	67550	67860	107300	107790	1.20	8.0	15.0	G-60
3	1.038	5	0.623	0.31	0.305	8.79	13.91	62520	63540	98990	100620	1.30	8.0	16.3	G-60
4	1.042	5	0.624	0.31	0.306	8.87	13.91	63100	63920	98990	100290	1.20	8.0	15.0	G-60
5	0.643	4	0.491	0.20	0.189	6.27	9.58	69130	73160	105670	111810	1.00	8.0	12.5	G-60
6	0.637	4	0.488	0.20	0.187	6.14	9.60	67670	72380	105890	113250	1.30	8.0	16.3	G-60
7	0.637	4	0.488	0.20	0.187	5.27	7.92	58120	62160	87340	93410	1.30	8.0	16.3	G-40
8	0.639	4	0.489	0.20	0.188	5.32	7.95	58680	62430	87680	93280	1.10	8.0	13.8	G-40
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**BEND TEST:**

# 6	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:- Only Twelve Samples Received and Tested</b>
# 5	Sample bend through 180 degrees Satisfactorily without any crack	
# 4	Sample bend through 180 degrees Satisfactorily without any crack	
# 4	Sample bend through 180 degrees Satisfactorily without any crack	

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Test Performed by: Dr. S. Asad Ali Gillani

**Khiam Sarwar**  
**Chemical Engineer**  
**Fawachem Construction Chemicals**  
**Lahore**

**Client Reference No.: 9204/FC/20**  
**SOM Lab Ref: CED/SOM/3345(Page 1/1)**  
**Test Type: Tensile Test**  
**Sample Type: Silka Carbodur S812**

**Dated: 01-12-2020**

**Dated: 01-12-2020**

**Tensile Test Results**

<b>Sample Type</b>	<b>Size of Sample (mm)</b>	<b>Ultimate Load (kN)</b>	<b>Ultimate Stress (MPa)</b>
<b>Silka Carbodur</b>	<b>12.5 x 1.2</b>	<b>32.5</b>	<b>2166.66</b>

**Note: Please always confirm the results on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)**

Test Performed by: .Dr. M. Irfan ul Hassan

Mohsin Hussain  
Manager I & QC,  
DTR & SG  
Pak Elektron Ltd. (PEL)  
Lahore

Client Reference No.: I & QC

Dated: 09-12-2020

SOM Lab Ref: CED/SOM/3403 (Page 1/2)

Dated: 10-12-2020

Test Type: Tensile Test & Hardness Test

Sample Type: Hex Head - Bolts (M12x35mm) M/s One Stop Discouted Supplies

**-Tensile Test Results**

Sample No.	Sample Type	Tested Diameter of Bolt (mm)	Ultimate Load (kN)	Ultimate Tensile Stress (MPa)	% Elongation
1	Hex Head Bolt (12 x 35mm)	6.0.2	21.0	742.7	24.0

**-Hardness Test Details:**

Machine used: Avery Rockwell Hardness Testing Machine

(Minor Load: 10 Kgf Major Load: 90.0 kgf Scale: B )

**Hardness Test Results**

Sample No.	Sample Type	Hardness	Sample Type	Hardness
1	Bolt 12mm	HR – 84.5 – B	Nut	HR – 95.83- B

Note: Please always confirm the results on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Test Performed By: Dr. Syed Asad Ali Gillani

Engr. Yousaf Zaman  
Resident Engineer,  
M-3, IC Industrial City, Faisalabad  
Osmani & Company (Pvt) Ltd.

Client Reference: CRE/M3IC/FIC/040/Lab/784

Dated: 12-11-2020

SOM Laboratory Reference: CED/SOM/3353(Page-1/1)

Dated: 01-12-2020

Test: Stiffness Test & Tensile Test & Compressive Test

Sample Type: GRP Pipe 350mm Diameter ( Bin Tariq Pvt. Ltd.)

**Stiffness Test (Parallel Plate Loading Test as per ASTM-D-2412)**

**(GRP Pipe 350mm)**

**Total Length = 308 mm, External Diameter = 372 mm, Wall Thickness = 11.0 mm**

Percentage Reduction in Diameter of Sample	Compression Load, P (kN)	Stiffness (Corrected)			Remarks
		Pipe Stiffness (kN/m <sup>2</sup> )	Stiffness Factor (N-m)	Specific Tangential initial Stiffness (N/m <sup>2</sup> )	
5%	8.60	1624	1423	33191	No Crack Observed
8.0%	9.50	1174	1029	23999	Delamination
12%	13.40	1173	1028	23977	Delamination
20%	16.0	945	828	19320	Delamination

**Tensile Test**

Sample Type	Size of Sample (mm)	Ultimate Load (kN)	Ultimate Stress (MPa)
GRP Pipe (350mm)	32.0x 11.0	6.2	17.613

Note: Please always confirm the results of above report on web: [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)