

Liberty  
Forum  
91-C/III, Noor Jahan Road, Gulberg -III, Lahore

Test Performed By:

Dr. /Engr.

S. Asad Ali  
Gillani

Client Reference: nil  
SOM Lab Ref: CED/SOM/966(Page-1/1)

Dated: 17-06-2019

Dated: 17-06-2019

Test: Tension Test & Bend Test

Test Specification: ASTM-A 615

Sample Type: Deformed Bar

Gauge Length: 200 mm

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)				
	kg/m	mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kN	kN	MPa	MPa	MPa	MPa	mm	mm	%	
1	3.885	25	25.11	491	495	212.00	321.50	432	429	655	650	32.5	200	16.3	
2	3.857	25	25.01	491	491	217.70	331.20	443	444	675	675	30.0	200	15.0	
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**BEND TEST:**

25mm	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-  Only Three Samples Received and Tested</b>

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

Engr. Muhammad Akram  
General Manager Projects, Orient , Lahore

Test Performed By: Dr. /Engr. S. Asad Ali Gillani

Client Reference: ORIENT/AFCO/Hotel Tower/Steel/003  
SOM Lab Ref: CED/SOM/970 (Page-1/1)  
Test: Tension Test & Bend Test  
Sample Type: Deformed Bar

Dated: 14-06-2019  
Dated: 17-06-2019  
Test Specification: ASTM-A-615  
Gauge Length: 200 mm

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)				
	kg/m	mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kN	kN	MPa	MPa	MPa	MPa	mm	mm	%	
1	3.068	22	22.31	380	391	175.70	272.50	462	450	717	697	40.0	200	20.0	
2	3.050	22	22.24	380	389	178.20	279.50	469	459	735	720	35.0	200	17.5	
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**BEND TEST:**

22mm	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-  Only Three Samples Received and Tested</b>

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

Ali Sajid Malik  
Principal Engineer, ASM Steel Buildings, Lahore

Test Performed By:

Dr. /Engr.

S. Asad Ali Gillani

Client Reference: Nil  
SOM Lab Ref: CED/SOM/971(Page-1/1)

Dated: nil  
Dated: 17-06-2019

Test: Tension Test  
Sample Type: J- Bolt

Test Specification: ASTM-F-1554  
Gauge Length: 200 mm

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)				
	kg/m	mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kN	kN	MPa	MPa	MPa	MPa	mm	mm	%	
1	3.477	24	23.75	380	443	241.70	295.00	636	546	776	666	27.5	200	13.8	
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**BEND TEST:**

--	No Bend test performed	<b>Note:-  Only One Sample Received and Tested</b>

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

Ali Sajid Malik  
Principal Engineer, ASM Steel Buildings, Lahore

Test Performed By:

Dr. /Engr.

S. Asad Ali Gillani

Client Reference: nil  
SOM Lab Ref: CED/SOM/971 (Page-1/1)

Dated: nil  
Dated: 17-06-2019

Test: Tension Test  
Sample Type: J- Bolt

Test Specification: ASTM-F-1554  
Gauge Length: 200 mm

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)				
	kg/m	mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kN	kN	MPa	MPa	MPa	MPa	mm	mm	%	
1	3.477	24	23.75	452	443	241.70	295.00	534	546	652	666	27.5	200	13.8	
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**BEND TEST:**

--	No Bend test performed	<b>Note:-  Only One Sample Received and Tested</b>

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

Hassan Danial  
At Large Constructions, Lahore

Test Performed By: Dr. /Engr. S. Asad Ali Gillani

Client Reference: nil

SOM Lab

Ref: 967(Page-1/1)

Dated: 17-06-2019

Dated: 17-06-2019

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	2.595	8	0.986	0.79	0.763	27.01	34.51	75420	78080	96330	99740	1.10	8.0	13.8	
2	2.577	8	0.982	0.79	0.757	26.78	33.86	74760	78020	94540	98660	1.20	8.0	15.0	
3	0.653	4	0.494	0.20	0.192	7.08	8.43	78130	81380	92960	96840	1.00	8.0	12.5	
4	0.651	4	0.493	0.20	0.191	7.19	8.51	79250	82980	93860	98290	1.00	8.0	12.5	
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**BEND TEST:**

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

Deputy Director (PCGIP)  
Water and Sanitation Agency (GDA) Gijranwala

Test Performed By: Dr. /Engr. M Rizwan Azam

Client Reference: WASA/DD(PCGIP)/157

SOM Lab

Ref: 969(Page-1/1)

Dated: 12-06-2019

Dated: 17-06-2019

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	1.513	6	0.753	0.44	0.445	16.02	21.43	80320	79420	107400	106200	1.10	8.0	13.8	
2	0.644	4	0.491	0.20	0.189	6.09	7.82	67110	71020	86220	91240	1.20	8.0	15.0	
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**BEND TEST:**

# 6	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-  Only Four 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)

Engr. Muhammad Akram  
General Manager Projects, Orient , Lahore

Test Performed By: Dr. /Engr.

S. Asad Ali  
Gillani

Client Reference: ORIENT/AFCO/Hotel Tower/Steel/003

SOM Lab

Ref: 970(Page-1/1)

Dated: 14-06-2019

Dated: 17-06-2019

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	2.061	6	0.878	0.44	0.606	17.91	27.78	89780	65180	139230	101090	1.60	8.0	20.0	
2	2.049	6	0.875	0.44	0.602	18.17	28.49	91050	66550	142810	104380	1.40	8.0	17.5	
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**BEND TEST:**

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

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

Rana Wasim  
SUNSHINE LPG (Pvt) Ltd. Lahore

Test Performed By: Dr. /Engr.

S. Asad Ali  
Gillani

Client Reference: Nil

SOM Lab

Ref: 972(Page-1/1)

Dated: 16-06-2019

Dated: 17-06-2018

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	1.046	6	0.625	0.44	0.307	8.84	14.58	44300	63490	73070	104720	0.80	8.0	10.0	
2	1.049	6	0.626	0.44	0.308	8.51	14.34	42670	60950	71890	102700	0.90	8.0	11.3	
3	0.509	4	0.437	0.20	0.150	5.02	7.31	55310	73740	80600	107460	1.00	8.0	12.5	
4	0.498	4	0.431	0.20	0.146	4.81	7.46	53060	72680	82290	112720	0.90	8.0	11.3	
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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)



Test Performed By: Dr. Nauman Khurram

Engr. Muhammad kaleem Sheikh  
Chief Resident Engineer,  
M-3, IC Industrial City, Faisalabad

Client Reference: CRE/M3IC/FIC-030/Lab/91

Dated: 06-05-2019

SOM Laboratory Reference: CED/SOM/899A(Page-1/4)

Dated: 27-05-2019

Test: Stiffness Test & Tensile Test,

Sample Type: GRP Pipe (1000mm Diameter)

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

(GRP Pipe 1000mm)

Total Length = 305 mm, External Diameter = 1027 mm, Wall Thickness = 13.8 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%	3.60	248	4806	4812	No Crack Observed

### Tensile Test

Sample Type	Size of Sample (mm)	Ultimate Load (kN)	Ultimate Stress (MPa)
GRP Pipe (1000mm)	13 x 21.6	8.7	30.98

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. Nauman Khurram

Engr. Muhammad kaleem Sheikh  
Chief Resident Engineer,  
M-3, IC Industrial City, Faisalabad

Client Reference: CRE/M3IC/FIC-030/Lab/91

Dated: 06-05-2019

SOM Laboratory Reference: CED/SOM/899A(Page-2/4)

Dated: 27-05-2019

Test: Stiffness Test & Tensile Test

Sample Type: GRP Pipe (800mm Diameter)

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

(GRP Pipe 800mm)

Total Length = 310 mm, External Diameter = 825 mm, Wall Thickness = 12.5 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%	2.65	224	2235	4364	No Crack Observed

**Tensile Test**

Sample Type	Size of Sample (mm)	Ultimate Load (kN)	Ultimate Stress (MPa)
GRP Pipe (800mm)	12.5 x 23.5	7.20	24.510

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. Nauman Khurram

Engr. Muhammad kaleem Sheikh  
Chief Resident Engineer,  
M-3, IC Industrial City, Faisalabad

Client Reference: CRE/M3IC/FIC-030/Lab/91

Dated: 06-05-2019

SOM Laboratory Reference: CED/SOM/899A(Page-1/4)

Dated: 27-05-2019

Test: Stiffness Test & Tensile Test

Sample Type: GRP Pipe (600mm Diameter)

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

**(GRP Pipe 600mm)**

Total Length = 310 mm, External Diameter = 628 mm, Wall Thickness = 14. 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%	3.2	355	1531	7090	No Crack Observed

**Tensile Test**

Sample Type	Size of Sample (mm)	Ultimate Load (kN)	Ultimate Stress (MPa)
GRP Pipe (600mm)	13.5 x 23.0	7.2	23.18

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. Nauman Khurram

Engr. Muhammad kaleem Sheikh  
Chief Resident Engineer,  
M-3, IC Industrial City, Faisalabad

Client Reference: CRE/M3IC/FIC-030/Lab/91

Dated: 06-05-2019

SOM Laboratory Reference: CED/SOM/899(Page-4/4)

Dated: 27-05-2019

Test: Stiffness Test & Tensile Test

Sample Type: GRP Pipe ( 450mm Diameter)

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

**(GRP Pipe 450mm)**

**Total Length = 307 mm, External Diameter = 473 mm, Wall Thickness = 11.5 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%	5.25	782	1431	15702	No Crack Observed

**Tensile Test**

Sample Type	Size of Sample (mm)	Ultimate Load (kN)	Ultimate Stress (MPa)
GRP Pipe (450mm)	11.5 x 23.0	6.7	25.33

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. Irfan ul Hassan

Engr. Muhammad Kaleem Shaikh  
Chief Resident Engineer  
M-3, IC Industrial City, Faisalabad

Client Reference: CRE/M31C/FIC-030/Lab/98

Dated 06-05-2019

SOM Laboratory Reference: CED/SOM/899(Page-1/1)

Dated 27-03-2019

Test: Tensile Strength Test & Elongation % at Break

Sample Type: Water Stopper

TENSILE STRENGTH AND ELONGATION TEST. (AS PER ASTM-D-412)

S. No	Sample Size (mm)	Ultimate Load (kN)	Tensile Strength (N/mm <sup>2</sup> )	% Elongation
1	12.0 x 4.4	0.78	14.77	308

Test Performed by: Dr. S. Asad Ali Gillani

Muhammad Waqas Anwar  
Resident Engineer –I,  
NESPAK (Pvt) Ltd. Lahore

Client Reference No.: 3772/AMP/103/MWA/04/22

Dated: 22-05-2019

SOM Lab Ref: CED/SOM/901 (Page-1/1)

Dated: 27-05-2019

Test Type: Tensile Test & Slippage Test

Sample Type: J-Bolt

#### Tensile Test Results

Sample No.	Sample Type	Yield Load (kN)	Ultimate Load (kN)	Yield Stress (MPa)	Ultimate Stress (MPa)	Elongation (%)
1	J- Bolt (25.4mm)	251.0	397.7	495	785	25

#### Slippage Test Results

Sample No.	Sample Type	Diameter of Bolt (mm)	Maximum Load Applied (kN)	Remarks
1	J – Bolt	25.4	298.7	Sample Breaks at this Load from thread portion

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