



MILITARY ENGINEER SERVICES (MES)

MATERIALS TESTING LABORATORY

Mobile: 01769-012888, <http://mes.org.bd>



Page no: 652

TEST RESULT FOR TENSILE STRENGTH OF PLAIN/DEFORMED/RIBBED COLD TWISTED M.S BARS

Job No : 146/2025-2026(Steel).

Copy No : 01

Name of Client : GE (Army) Sylhet.

Sample Specimen : Length 600mm , Dia 10mm

Ref.ltr.No : CEA/413 of 2025-2026/09/E-6 Dt.07 Jun'2026.

Sample Grade : 60

Project Name : Construction of 1 x 104 OR'S Family Qtr.

Frog Mark : GPH B-420 DWR.

Dt. of Sample Collection : 14 Jun'2026

Dt. Of Test : 14 Jun'2026

Sample No	Nominal Dia	Actual Dia	Area Under Test	Actual Unit Weight	Average Actual Unit Weight	Yield or Proof load	Yield or Proof Strength	Average Yield or Proof load	Ultimate load	Ultimate Strength	Average Ultimate Strength	Ratio	Elongation% (gauge length)		Average Elongation% (gauge length)	
	inch mm	inch mm	sq.inch sq.mm	lb/ft kg/m	lb/ft kg/m	lb kn	psi Mpa	psi Mpa	lb kn	psi Mpa	psi Mpa	(Fult/Fy)	8inch	5d	8inch	5d
1	0.394 10.00	0.397 10.07	0.1217 78.5398	0.420 0.626	0.420 0.626	11575.47 51.49	95086 656	95080 656	14862.26 66.11	122085 842	122232 843	1.28	19.5	20	20	20
2	0.394 10.00	0.397 10.07	0.1217 78.5398	0.420 0.626		11575.47 51.49	95086 656		14862.26 66.11	122085 842		1.28	21			
3	0.394 10.00	0.397 10.07	0.1217 78.5398	0.420 0.626		11573.14 51.48	95067 656		14915.76 66.35	122524 845		1.29	19.5			

Observation on Specimen(if any):

ASTM A61M-16 Weight Requirements and Nominal Area of bars (Table A1.1)

Conveion factor: 1.0 Mpa = 1.0 N/mm²= 145 Psi. Strengths are based on nominal area.

Bar design/Nominal dia, mm	8	10	12	16	20	22	25	28	32	36	40	50	60
Nominal area, sq.mm	50.3	79	113	201	314	380	491	615	804	1018	1257	1963	2827
Nominal weight, kg/m	0.395	0.617	0.888	1.578	2.466	2.98	3.853	4.834	6.313	7.99	9.865	15.41	22.2

Measured Unit weight shall not be less than 94% of the nominal weight . 8mm bar size is not covered in ASTM A615M-16.

Area and weight of 8mm & 22mm dia. Bars are derived based on principle follwed for other sizes in Table A1.1

Actual dia. and TS/YS ratio are provided for informative purpose only. These are not requirements of ASTM A615M-16.

Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length.

ASTM A615M -16 Tensile Requirements for Common Steel Grades

	Grade 60 [420]	Grade 75 [520]	Grade 80 [550]
Tensile strength , min.psi [Mpa]	90 000 [620]	100 000 [690]	105 000 [725]
Yield Strength, min, psi [Mpa]	60 000 [420]	75 000 [520]	80 000 [550]

Elongation in 8 in. [200 mm], min, %

Bar Designation No.

10, 12, 16, 20	9	7	7
25, 22	8	7	7
28, 32, 36, 40, 60	7	6	6

Report Prepared by :

Test Performed by :

Countersigned by :

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TEST RESULT FOR TENSILE STRENGTH OF PLAIN/DEFORMED/RIBBED COLD TWISTED M.S BARS

Page no: 653

Job No : 146/2025-2026(Steel).

Copy No : 02

Name of Client : GE (Army) Sylhet.

Sample Specimen : Length 600mm , Dia 12mm

Ref.ltr.No : CEA/413 of 2025-2026/09/E-6 Dt.07 Jun'2026.

Sample Grade : 60

Project Name : Construction of 1 x 104 OR'S Family Qtr.

Frog Mark : GPH B-420 DWR.

Dt. of Sample Collection: : 14 Jun'2026

Dt. Of Test : 14 Jun'2026

Sample No	Nominal Dia	Actual Dia	Area Under Test	Actual Unit Weight	Average Actual Unit Weight	Yield or Proof load	Yield or Proof Strength	Average Yield or Proof load	Ultimate load	Ultimate Strength	Average Ultimate Strength	Ratio	Elongation% (gauge length)		Average Elongation% (gauge length)	
	inch mm	inch mm	sq.inch sq.mm	lb/ft kg/m	lb/ft kg/m	lb kn	psi Mpa	psi Mpa	lb kn	psi Mpa	psi Mpa	(Fult/Fy)	8inch	5d	8inch	5d
1	0.472	0.474	0.175	0.599	0.599	14822.72	84556	84476	19237.67	109741	109988	1.30	19.5		21	
	12.00	12.03	113.097	0.892		65.93	583		85.57	757						
2	0.472	0.474	0.175	0.599	0.892	14750.61	84144	583	19260.93	109873	759	1.31	20.5		21	
	12.00	12.03	113.097	0.892		65.61	580		85.68	758						
3	0.472	0.474	0.175	0.599	0.892	14852.95	84728	583	19344.67	110351	761	1.30	22.5		21	
	12.00	12.03	113.097	0.892		66.07	584		86.05	761						

Observation on Specimen(if any):

ASTM A61M-16 Weight Requirements and Nominal Area of bars (Table A1.1)

Conveion factor: 1.0 Mpa = 1.0 N/mm2= 145 Psi. Strengths are based on nominal area.

Bar design/Nominal dia, mm	8	10	12	16	20	22	25	28	32	36	40	50	60
Nominal area, sq.mm	50.3	79	113	201	314	380	491	615	804	1018	1257	1963	2827
Nominal weight, kg/m	0.395	0.617	0.888	1.578	2.466	2.98	3.853	4.834	6.313	7.99	9.865	15.41	22.2

Measured Unit weight shall not be less than 94% of the nominal weight . 8mm bar size is not covered in ASTM A615M-16.

Area and weight of 8mm & 22mm dia. Bars are derived based on principle follwed for other sizes in Table A1.1

Actual dia. and TS/YS ratio are provided for informative purpose only. These are not requirements of ASTM A615M-16.

Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length.

ASTM A615M -16 Tensile Requirements for Common Steel Grades

	Grade 60 [420]	Grade 75 [520]	Grade 80 [550]
Tensile strength , min.psi [Mpa]	90 000 [620]	100 000 [690]	105 000 [725]
Yield Strength, min, psi [Mpa]	60 000 [420]	75 000 [520]	80 000 [550]
Elongation in 8 in. [200 mm], min, %			

Bar Designation No.

10, 12, 16, 20	9	7	7
25, 22	8	7	7
28, 32, 36, 40, 60	7	6	6

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TEST RESULT FOR TENSILE STRENGTH OF PLAIN/DEFORMED/RIBBED COLD TWISTED M.S BARS

Page no: 654

Job No : 146/2025-2026(Steel).

Copy No : 03

Name of Client : GE (Army) Sylhet.

Sample Specimen : Length 600mm , Dia 16mm

Ref.ltr.No : CEA/413 of 2025-2026/09/E-6 Dt.07 Jun'2026.

Sample Grade : 60

Project Name : Construction of 1 x 104 OR'S Family Qtr.

Frog Mark : GPH B-420 DWR.

Dt. of Sample Collection : 14 Jun'2026

Dt. Of Test : 14 Jun'2026

Sample No	Nominal Dia	Actual Dia	Area Under Test	Actual Unit Weight	Average Actual Unit Weight	Yield or Proof load	Yield or Proof Strength	Average Yield or Proof load	Ultimate load	Ultimate Strength	Average Ultimate Strength	Ratio	Elongation% (gauge length)		Average Elongation% (gauge length)	
	inch mm	inch mm	sq.inch sq.mm	lb/ft kg/m	lb/ft kg/m	lb kn	psi Mpa	psi Mpa	lb kn	psi Mpa	psi Mpa	(Fult/Fy)	8inch	5d	8inch	5d
1	0.630 16.00	0.630 16.01	0.312 201.062	1.062 1.580	1.062 1.580	23671.23 105.29	75955 524	77777 536	31968.47 142.20	102579 707	107421 741	1.35	25	23	1	1
2	0.630 16.00	0.630 16.01	0.312 201.062	1.062 1.580		24534.22 109.13	78724 543		34199.20 152.12	109737 757		1.39	22.5			
3	0.630 16.00	0.630 16.01	0.312 201.062	1.062 1.580		24510.96 109.03	78650 542		34264.33 152.41	109946 758		1.40	22.5			

Observation on Specimen(if any):

ASTM A61M-16 Weight Requirements and Nominal Area of bars (Table A1.1)

Conveion factor: 1.0 Mpa = 1.0 N/mm²= 145 Psi. Strengths are based on nominal area.

Bar design/Nominal dia, mm	8	10	12	16	20	22	25	28	32	36	40	50	60
Nominal area, sq.mm	50.3	79	113	201	314	380	491	615	804	1018	1257	1963	2827
Nominal weight, kg/m	0.395	0.617	0.888	1.578	2.466	2.98	3.853	4.834	6.313	7.99	9.865	15.41	22.2

Measured Unit weight shall not be less than 94% of the nominal weight . 8mm bar size is not covered in ASTM A615M-16.

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Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length.

ASTM A615M -16 Tensile Requirements for Common Steel Grades

	Grade 60 [420]	Grade 75 [520]	Grade 80 [550]
Tensile strength , min.psi [Mpa]	90 000 [620]	100 000 [690]	105 000 [725]
Yield Strength, min, psi [Mpa]	60 000 [420]	75 000 [520]	80 000 [550]

Elongation in 8 in. [200 mm], min, %

Bar Designation No.

10, 12, 16, 20	9	7	7
25, 22	8	7	7
28, 32, 36, 40, 60	7	6	6

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TEST RESULT FOR TENSILE STRENGTH OF PLAIN/DEFORMED/RIBBED COLD TWISTED M.S BARS

Page no: 655

Job No : 146/2025-2026(Steel). Copy No : 04
 Name of Client : GE (Army) Sylhet. Sample Specimen : Length 600mm , Dia 20mm
 Ref.ltr.No : CEA/413 of 2025-2026/09/E-6 Dt.07 Jun'2026. Sample Grade : 60
 Project Name : Construction of 1 x 104 OR'S Family Qtr. Frog Mark : GPH B-420 DWR.
 Dt. of Sample Collection : 14 Jun'2026 Dt. Of Test : 14 Jun'2026

Sample No	Nominal Dia	Actual Dia	Area Under Test	Actual Unit Weight	Average Actual Unit Weight	Yield or Proof load	Yield or Proof Strength	Average Yield or Proof load	Ultimate load	Ultimate Strength	Average Ultimate Strength	Ratio	Elongation% (gauge length)		Average Elongation% (gauge length)	
	inch mm	inch mm	sq.inch sq.mm	lb/ft kg/m	lb/ft kg/m	lb kn	psi Mpa	psi Mpa	lb kn	psi Mpa	psi Mpa	(Fult/Fy)	8inch	5d	8inch	5d
1	0.787 20.00	0.788 20.01	0.4869 314.1593	1.660 2.470	1.660 2.470	35466.93 157.76	72835 502	73093 504	48860.67 217.34	100341 692	97925 675	1.38	24	23		
2	0.787 20.00	0.788 20.01	0.4869 314.1593	1.660 2.470		35294.80 157.00	72482 500		44648.09 198.60	91690 632		1.27	22			
3	0.787 20.00	0.788 20.01	0.4869 314.1593	1.660 2.470		36015.89 160.21	73963 510		49544.55 220.38	101745 702		1.38	24			

Observation on Specimen(if any):

ASTM A61M-16 Weight Requirements and Nominal Area of bars (Table A1.1) Conveion factor: 1.0 Mpa = 1.0 N/mm²= 145 Psi. Strengths are based on nominal area.

Bar design/Nominal dia, mm	8	10	12	16	20	22	25	28	32	36	40	50	60
Nominal area, sq.mm	50.3	79	113	201	314	380	491	615	804	1018	1257	1963	2827
Nominal weight, kg/m	0.395	0.617	0.888	1.578	2.466	2.98	3.853	4.834	6.313	7.99	9.865	15.41	22.2

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Yield Strength, min, psi [Mpa]	60 000 [420]	75 000 [520]	80 000 [550]

Elongation in 8 in. [200 mm], min, %

Bar Designation No.

10, 12, 16, 20	9	7	7
25, 22	8	7	7
28, 32, 36, 40, 60	7	6	6

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TEST RESULT FOR TENSILE STRENGTH OF PLAIN/DEFORMED/RIBBED COLD TWISTED M.S BARS

Page no: 656

Job No : 146/2025-2026(Steel).

Copy No : 05

Name of Client : GE (Army) Sylhet.

Sample Specimen : Length 600mm , Dia 25mm

Ref.ltr.No : CEA/413 of 2025-2026/09/E-6 Dt.07 Jun'2026.

Sample Grade : 60

Project Name : Construction of 1 x 104 OR'S Family Qtr.

Frog Mark : GPH B-420 DWR.

Dt. of Sample Collection: : 14 Jun'2026

Dt. Of Test : 14 Jun'2026

Sample No	Nominal Dia	Actual Dia	Area Under Test	Actual Unit Weight	Average Actual Unit Weight	Yield or Proof load	Yield or Proof Strength	Average Yield or Proof load	Ultimate load	Ultimate Strength	Average Ultimate Strength	Ratio	Elongation% (gauge length)		Average Elongation% (gauge length)	
	inch mm	inch mm	sq.inch sq.mm	lb/ft kg/m	lb/ft kg/m	lb kn	psi Mpa	psi Mpa	lb kn	psi Mpa	psi Mpa	(Fult/Fy)	8inch	5d	8inch	5d
1	0.984 25.00	0.987 25.08	0.7609 490.8739	2.607 3.878	2.607 3.878	56704.31 252.23	74527 514	73553 507	76969.37 342.38	101162 698	101124 697	1.36	24.5	27	27	27
2	0.984 25.00	0.987 25.08	0.7609 490.8739	2.607 3.878		55692.45 247.73	73197 505		76797.24 341.61	100935 696		1.38	28			
3	0.984 25.00	0.987 25.08	0.7609 490.8739	2.607 3.878		55492.41 246.84	72934 503		77055.44 342.76	101275 698		1.39	27			

Observation on Specimen(if any):

ASTM A61M-16 Weight Requirements and Nominal Area of bars (Table A1.1)

Conveion factor: 1.0 Mpa = 1.0 N/mm²= 145 Psi. Strengths are based on nominal area.

Bar design/Nominal dia, mm	8	10	12	16	20	22	25	28	32	36	40	50	60
Nominal area, sq.mm	50.3	79	113	201	314	380	491	615	804	1018	1257	1963	2827
Nominal weight, kg/m	0.395	0.617	0.888	1.578	2.466	2.98	3.853	4.834	6.313	7.99	9.865	15.41	22.2

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Tensile strength , min.psi [Mpa]	90 000 [620]	100 000 [690]	105 000 [725]
Yield Strength, min, psi [Mpa]	60 000 [420]	75 000 [520]	80 000 [550]

Elongation in 8 in. [200 mm], min, %

Bar Designation No.

10, 12, 16, 20	9	7	7
25, 22	8	7	7
28, 32, 36, 40, 60	7	6	6

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