



MILITARY ENGINEER SERVICES (MES) MATERIAL TESTING LABORATORY

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



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

Page no: 657

Job No : 02/2026-2027(Steel).

Name of Client : AGE (Navy) Mongla.

Ref.ltr.No : EinC/13 of 2025-2026/34/E-6 Dt.01 Jul'2026.

Project Name : Construction of 1 x Multipurpose Building.

Dt. of Sample Collection: : 02 Jul'2026

Copy No : 01

Sample Specimen : Length 600mm , Dia 12mm

Sample Grade : 72.5

Frog Mark : GPH B-500 DWR.

Dt. Of Test : 05 Jul'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 12.00	0.473 12.00	0.175 113.097	0.597 0.888	0.597 0.888	16464.95 73.24	93924 648	95454 658	20817.10 92.60	118750 819	119241 822	1.26	16	16	16	16
2	0.472 12.00	0.473 12.00	0.175 113.097	0.597 0.888		16809.21 74.77	95888 661		20882.23 92.89	119122 822		1.24	15			
3	0.472 12.00	0.473 12.00	0.175 113.097	0.597 0.888		16925.52 75.29	96551 666		21010.17 93.46	119852 827		1.24	16			

Observation on Specimen(if any):

ASTM A615M-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 :

MD IKBAL HOSSEN

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Test Performed by :

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

Page no: 658

Job No : 02/2026-2027(Steel).

Name of Client : AGE (Navy) Mongla.

Ref.ltr.No : EinC/13 of 2025-2026/34/E-6 Dt.01 Jul'2026.

Project Name : Construction of 1 x Multipurpose Building.

Dt. of Sample Collection: : 02 Jul'2026

Copy No : 02

Sample Specimen : Length 600mm, Dia 16mm

Sample Grade : 72.5

Frog Mark : GPH B-500 DWR.

Dt. Of Test : 05 Jul'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	inch	sq.inch	lb/ft	lb/ft	lb	psi	psi	lb	psi	psi	(Fult/Fy)	8inch	5d	8inch	5d
	mm	mm	sq.mm	kg/m	kg/m	kn	Mpa	Mpa	kn	Mpa	Mpa					
1	0.630	0.627	0.312	1.049		26243.91	84210		34703.97	111357		1.32	20.5			
	16.00	15.91	201.062	1.561		116.74	581		154.37	768						
2	0.630	0.627	0.312	1.049	1.049	26255.54	84248	84728	34755.14	111521	111578	1.32	22.5		21	
	16.00	15.91	201.062	1.561	1.561	116.79	581	584	154.60	769	770					
3	0.630	0.627	0.312	1.049		26716.11	85726		34859.82	111857		1.30	20.5			
	16.00	15.91	201.062	1.561		118.84	591		155.06	771						

Observation on Specimen(if any):

1.Diameter & Unit weight of 16 mm bar is less than the standard value but within tolerance limit according to MES Schedule of Rates-2016.

ASTM A615M-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 followed 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

25, 22

28, 32, 36, 40, 60

9

8

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6

Report Prepared by :

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

Page no: 659

Job No : 02/2026-2027(Steel).

Copy No : 03

Name of Client : AGE (Navy) Mongla.

Sample Specimen : Length 600mm , Dia 20mm

Ref.ltr.No : EinC/13 of 2025-2026/34/E-6 Dt.01 Jul'2026.

Sample Grade : 72.5

Project Name : Construction of 1 x Multipurpose Building.

Frog Mark : GPH B-500 DWR.

Dt. of Sample Collection: : 02 Jul'2026

Dt. Of Test : 05 Jul'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	0.786 19.98	0.4869 314.1593	1.653 2.460		38688.59 172.09	79451 548		52742.95 234.61	108313 747		1.36	21.5			
2	0.787 20.00	0.786 19.98	0.4869 314.1593	1.653 2.460	1.653 2.460	39023.55 173.58	80139 553	79751 550	53108.14 236.24	109063 752	108610 749	1.36	21.5		21	
3	0.787 20.00	0.786 19.98	0.4869 314.1593	1.653 2.460		38790.94 172.55	79661 549		52810.40 234.91	108452 748		1.36	21			

Observation on Specimen(if any):

1.Diameter & Unit weight of 20 mm bar is less than the standard value but within tolerance limit according to MES Schedule of Rates-2016.

ASTM A615M-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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M E S
Material Testing
Laboratory

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

Page no: 660

Job No : 02/2026-2027(Steel).

Name of Client : AGE (Navy) Mongla.

Ref.ltr.No : EinC/13 of 2025-2026/34/E-6 Dt.01 Jul'2026.

Project Name : Construction of 1 x Multipurpose Building.

Dt. of Sample Collection: : 02 Jul'2026

Copy No : 04

Sample Specimen : Length 600mm , Dia 25mm

Sample Grade : 72.5

Frog Mark : GPH B-500 DWR.

Dt. Of Test : 05 Jul'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	0.983 24.98	0.7609 490.8739	2.585 3.846		63912.92 284.30	84001 579		85803.93 381.67	112773 778		1.34	22.5			
2	0.984 25.00	0.983 24.98	0.7609 490.8739	2.585 3.846	2.585 3.846	62456.78 277.82	82088 566	83522 576	85250.32 379.21	112045 773	112371 775	1.36	21.5		22	
3	0.984 25.00	0.983 24.98	0.7609 490.8739	2.585 3.846		64275.79 285.91	84478 583		85441.06 380.06	112296 774		1.33	20.5			

Observation on Specimen(if any):

1.Diameter & Unit weight of 25 mm bar is less than the standard value but within tolerance limit according to MES Schedule of Rates-2016.

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

25, 22

28, 32, 36, 40, 60

9

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6

Report Prepared by :

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Page no: 661

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

Job No : 02/2026-2027(Steel).

Name of Client : AGE (Navy) Mongla.

Ref.ltr.No : EinC/13 of 2025-2026/34/E-6 Dt.01 Jul'2026.

Project Name : Construction of 1 x Multipurpose Building.

Dt. of Sample Collection: 02 JUL'2026

Copy No : 05

Sample Specimen : Length 600mm , Dia 28mm

Sample Grade : 72.5

Frog Mark : GPH B-500 DWR.

Dt. Of Test : 05 Jul'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	inch	sq.inch	lb/ft	lb/ft	lb	psi	psi	lb	psi	psi	(Fult/Fy)	8inch	5d
	mm	mm	sq.mm	kg/m	kg/m	kn	Mpa	Mpa	kn	Mpa	Mpa			
1	1.102	1.101	0.9544	3.240		80077.05	83901		103156.71	108083		1.29	22.5	
	28.00	27.965	615.7522	4.822		356.20	579		458.86	745				
2	1.102	1.101	0.9544	3.240	3.240	80195.68	84026	84043	103754.52	108710	108455	1.29	22.58	23
	28.00	27.965	615.7522	4.822	4.822	356.73	579	580	461.52	750	748			
3	1.102	1.101	0.9544	3.240		80363.16	84201		103624.26	108573		1.29	24.5	
	28.00	27.965	615.7522	4.822		357.47	581		460.94	749				

Observation on Specimen(if any):

1.Diameter & Unit weight of 28 mm bar is less than the standard value but within tolerance limit according to MES Schedule of Rates-2016.

ASTM A615M-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

25, 22

28, 32, 36, 40, 60

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7

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Report Prepared by :

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