



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: 677

Job No : 05/2026-2027(Steel).
Name of Client : GE (Navy) North Chattogram.
Ref.ltr.No : EinC/15 of 2025-2026/24/E-6 Dt.29 Jun'2026.
Project Name : Construction of Bangladesh Navy Technical Institute.
Dt. of Sample Collection : 05 Jul'2026

Copy No : 01
Sample Specimen : Length 600mm , Dia 10mm
Sample Grade : 60
Frog Mark : AKS B-420 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	0.394	0.392	0.1217	0.412		11287.03	92717		14136.51	116123		1.25	17			
	10.00	9.97	78.5398	0.613		50.21	639		62.88	801						
2	0.394	0.392	0.1217	0.412	0.412	11110.25	91264	91748	14136.51	116123	116123	1.27	17		18	
	10.00	9.97	78.5398	0.613	0.613	49.42	629	633	62.88	801	801					
3	0.394	0.392	0.1217	0.412		11110.25	91264		14136.51	116123		1.27	18.5			
	10.00	9.97	78.5398	0.613		49.42	629		62.88	801						

Observation on Specimen(if any):

1.Diameter & Unit weight of 10 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

9

7

7

25, 22

8

7

7

28, 32, 36, 40, 60

7

6

6

Report Prepared by :

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

Page no: 678

Job No : 05/2026-2027(Steel).
Name of Client : GE (Navy) North Chattogram.
Ref.ltr.No : EinC/15 of 2025-2026/24/E-6 Dt.29 Jun'2026.
Project Name : Construction of Bangladesh Navy Technical Institute.
Dt. of Sample Collection: 05 Jul'2026

Copy No : 02
Sample Specimen : Length 600mm , Dia 12mm
Sample Grade : 60
Frog Mark : AKS B-420 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	0.477 12.10	0.175 113.097	0.607 0.903	0.607 0.903	14152.80 62.95	80734 557	81999 566	18832.93 83.77	107432 741	108356 747	1.33	18.5	1	20	1
2	0.472 12.00	0.477 12.10	0.175 113.097	0.607 0.903		14834.35 65.99	84622 584		19212.08 85.46	109595 756		1.30	21			
3	0.472 12.00	0.477 12.10	0.175 113.097	0.607 0.903		14136.51 62.88	80641 556		18939.93 84.25	108042 745		1.34	20.5			

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

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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: 679

Job No : 05/2026-2027(Steel).
Name of Client : GE (Navy) North Chattogram.
Ref.ltr.No : EinC/15 of 2025-2026/24/E-6 Dt.29 Jun'2026.
Project Name : Construction of Bangladesh Navy Technical Institute.
Dt. of Sample Collection: 05 Jul'2026

Copy No : 03
Sample Specimen : Length 600mm , Dia 16mm
Sample Grade : 60
Frog Mark : AKS B-420 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	0.630 16.00	0.632 16.05	0.312 201.062	1.067 1.588		22484.92 100.02	72149 498		30614.67 136.18	98235 677		1.36	24.5	
2	0.630 16.00	0.632 16.05	0.312 201.062	1.067 1.588	1.067 1.588	22873.38 101.75	73395 506	72709 501	30549.54 135.89	98026 676	98370 678	1.34	25	25
3	0.630 16.00	0.632 16.05	0.312 201.062	1.067 1.588		22619.83 100.62	72582 501		30805.41 137.03	98847 682		1.36	26.5	

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

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

Page no: 680

Job No : 05/2026-2027(Steel).

Copy No : 04

Name of Client : GE (Navy) North Chattogram.

Sample Specimen : Length 600mm , Dia 20mm

Ref.ltr.No : EinC/15 of 2025-2026/24/E-6 Dt.29 Jun'2026.

Sample Grade : 60

Project Name : Construction of Bangladesh Navy Technical Institute.

Frog Mark : AKS B-420 DWR.

Dt. of Sample Collection: 05 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	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	0.787	0.792	0.4869	1.675		37234.78	76466		50281.92	103259		1.35	23.5	
	20.00	20.11	314.1593	2.492		165.63	527		223.66	712				
2	0.787	0.792	0.4869	1.675	1.675	37062.64	76112	74369	50440.10	103584	102936	1.36	24.5	24
	20.00	20.11	314.1593	2.492	2.492	164.86	525	513	224.37	714	710			
3	0.787	0.792	0.4869	1.675		34343.42	70528		49651.55	101965		1.45	25	
	20.00	20.11	314.1593	2.492		152.77	486		220.86	703				

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

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	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 :

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

Page no: 681

Job No : 05/2026-2027(Steel).
Name of Client : GE (Navy) North Chattogram.
Ref.ltr.No : EinC/15 of 2025-2026/24/E-6 Dt.29 Jun'2026.
Project Name : Construction of Bangladesh Navy Technical Institute.
Dt. of Sample Collection: 05 Jul'2026

Copy No : 05
Sample Specimen : Length 600mm , Dia 25mm
Sample Grade : 60
Frog Mark : AKS B-420 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	0.992 25.21	0.7609 490.8739	2.633 3.918		54222.35 241.19	71265 491		72828.90 323.96	95720 660		1.34	27			
2	0.984 25.00	0.992 25.21	0.7609 490.8739	2.633 3.918	2.633 3.918	53747.82 239.08	70641 487	70877 489	73042.90 324.91	96001 662	95832 661	1.36	28.5		29	
3	0.984 25.00	0.992 25.21	0.7609 490.8739	2.633 3.918		53810.63 239.36	70724 488		72870.77 324.14	95775 661		1.35	30.5			

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
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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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Bar Designation No.

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

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