# MILITARY ENGINEER SERVICES (MES)
## MATERRIALS TESTING LABORATORY

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

M E S
Material Testing Laboratory

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



Job No : 359(D)/2025-2026(Steel).
Name of Client : AGE (Navy) Kaptai.
Ref.ltr.No : CEN/64 of 2025-2026/10/E-6 Dt.14 May'2026.
Project Name : Construction of 1 x Multipurpose Dril Shed.
Dt. of Sample Collection: : 19 May'2026

Copy No : 01
Sample Specimen : Length 600mm , Dia 12mm
Sample Grade : 72.5
Frog Mark : BSRM B-500 DWR.
Dt. Of Test : 19 May'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<br>mm | inch<br>mm | sq.inch<br>sq.mm | lb/ft<br>kg/m | lb/ft<br>kg/m | lb<br>kn | psi<br>Mpa | psi<br>Mpa | lb<br>kn | psi<br>Mpa | psi<br>Mpa | (Fult/Fy) | 8inch | 5d | 8inch | 5d |
| 1 | 0.472<br>12.00 | 0.470<br>11.93 | 0.175<br>113.097 | 0.590<br>0.878 | | 16967.39<br>75.47 | 96790<br>668 | | 21031.10<br>93.55 | 119971<br>827 | | 1.24 | 19.5 | | | |
| 2 | 0.472<br>12.00 | 0.470<br>11.93 | 0.175<br>113.097 | 0.590<br>0.878 | 0.590<br>0.878 | 17704.76<br>78.75 | 100996<br>697 | 99143<br>684 | 21563.78<br>95.92 | 123010<br>848 | 121709<br>839 | 1.22 | 18.5 | | 21 | |
| 3 | 0.472<br>12.00 | 0.470<br>11.93 | 0.175<br>113.097 | 0.590<br>0.878 | | 17467.50<br>77.70 | 99643<br>687 | | 21412.58<br>95.25 | 122147<br>842 | | 1.23 | 24.5 | | | |

Ovservation on Specimen(if any):
1.Diameter & Unit weight of 12 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 |

Material Testing Laboratory Military Engineer Services (MES)

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