

**The Republic of the Union of Myanmar**

**Ministry of Construction**



**MOC Standard Specifications and Testing Methods**

**of**

**Deformed Bars for Concrete Reinforcement**

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# Standard Specification and Testing Methods of Deformed Bars for Concrete Reinforcement (Standard for Ministry of Construction)

## 1. Scope

These specification and testing methods cover the deformed bars to use in reinforced concrete construction.

The mechanical properties and chemical composition of deformed bars are mentioned. The mechanical properties can be known by conducting the testing method described in this standard for Ministry of Construction (MOC).

This standard for Ministry of Construction (MOC) does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

## 2. Objective

- To specify the quality of both locally manufactured and imported products and of services in Myanmar, leading to improve protection of consumers.
- To support the use of standards in all spheres of economic activity, aim at achieving an efficient economy, better social and environmental protection, and an enhanced quality of life for citizens.
- To develop and implement an effective National Quality Infrastructure System to fit the needs of the country.

## 3. Chemical Composition of Deformed Bar

The Phosphorus (*P*) content shall not exceed 0.06%.

## 4. Standard Specification for Mechanical Properties of Deformed Bars

Table 4.1 Specification for Tensile Strength and Yield Strength

Grade	Tensile Strength (MPa)	Yield Strength (MPa)
Grade 40	420 MPa	280 MPa
Grade 60	620 MPa	420 MPa
Grade 75	690 MPa	520 MPa

Table 4.2 Specification for Elongation of Deformed Bar

Sr No	Bar Size	Elongation (min:) (%)		
		G-40	G-60	G-75
1	D10	11	9	-
2	D12	12	9	-
3	D 13	12	9	-
4	D 14	12	9	-
5	D 16	12	9	-
6	D 18	12	9	-
7	D 19	12	9	7
8	D 20	-	8	7
9	D 22	-	8	7
10	D 24	-	8	7
11	D 25	-	8	7
12	D 28	-	7	6
13	D 29	-	7	6
14	D 30	-	7	6
15	D 32	-	7	6
16	D 36	-	7	6
17	D 43	-	7	6
18	D 57	-	7	6

Table 4.3 Specification for Nominal Diameter and Unit Mass of Deformed bar

Sr No	Bar Size	Nominal Diameter ( <i>mm</i> )	Nominal Mass ( <i>kg/m</i> )
1.	D 10	10	0.617
2.	D 12	12	0.888
3.	D 13	13	1.042
4.	D 14	14	1.208
5.	D 16	16	1.578
6.	D 18	18	1.997
7.	D 19	19	2.226
8.	D 20	20	2.466
9.	D 22	22	2.984
10	D 24	24	3.551
11	D 25	25	3.853
12	D 28	28	4.833
13	D 29	29	5.185
14	D 30	30	5.549
15	D 32	32	6.313
16	D 36	36	7.990
17	D 43	43	11.399
18	D 57	57	20.030

Deformed reinforcing bars shall be evaluated on the basis of nominal weight (mass). The weight (mass) determined using the measured weight (mass) of test specimen, shall be at least 94% of the applicable weight (mass) per unit length prescribed in above table [Permissible variation in weight (mass)]

## 5. Testing Method and Apparatus

The testing method of deformed bars is adopted from ASTM A-370. Tension Testing Machine is used to obtain tensile strength, yield strength and elongation of deformed bars.



**Servo Control Electronic Universal Testing Machine**

## 6. References

### 6.1. ASTM Standards

A615/A615M-01b Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

A370-02 Standard Test Methods and Definitions for Mechanical Testing of Steel Products

### 6.2. BS Standards

BS 4449 Steel for reinforcement of concrete-weldable reinforcing steel- bar, coil and decoiled product- specification