



## **DRAFT TANZANIA STANDARD**

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**Specification for Steel wires for staples, pins and clips**

DRAFT FOR PUBLIC COMMENTS

**TANZANIA BUREAU OF STANDARDS**

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The Mechanical Engineering Divisional Standards Committee (MEDC) under whose supervision, this Tanzania Standard was prepared, consists of representatives from the following organizations:

- \*University of Dar es Salaam, College of Engineering and Technology
- \*National Development Corporation (NDC)
- Weights and Measures Agency (WMA)
- Tanzania Industrial Research Development Organization (TIRDO)
- \*Aluminium Africa Limited
- National Institute of Transport (NIT)
- Ministry of Works

The organizations marked with an asterisk (\*) in the above list, together with the following, were directly represented on the Technical Committee entrusted with the preparation of this Tanzania Standard:

- Tanzania Automotive Technology Centre (TATC)
- National Development Corporation (NDC)
- M.M. Integrated Steel Mills Limited
- Trans Auto Parts Company Limited (TAPCO)
- Dar Es Salaam Institute of Technology (DIT)

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# Specification for steel wires for staples, pins and clips

## 0 Foreword

Staples, pins and clips are the products that are used for the offices and stationaries. Currently these products are available at different levels of quality and performance. Therefore, in order to meet performance and quality that required for ensuring the public safety, health, environmental protection and social-economic welfare in offices and stationaries the standard has been prepared.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a measurement or test shall be rounded off in accordance with TZS 4, *Rounding off numerical values*.

During the preparation of this Tanzania Standard, assistance was derived from the following publications:

IS 4224:1972, published by the Bureau of Indian Standards *Specification for Steel wires for staples, pins and clips*.

## 1 Scope

1.1 This standard covers the requirements, test methods and sampling for three types of steel wire of round, square, rectangular or any other shape used for staples, pins and clips for various purposes.

1.2 The staples, pins and clips for various purposes are also specified in this standard.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. All standards are subject to revision and, since any reference to a standard is deemed to be a reference to the latest edition of that standard, parties to agreements based on this standard are encouraged to take steps to ensure the use of the most recent editions of the standards indicated below.

ISO 404, Steel and steel products — General technical delivery requirements.

ISO/TR 9769, Steel and iron — Review of available methods of analysis.

ISO 1461, Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods

ISO 6892-1, Metallic materials — Tensile testing — Part 1: Method of test at room temperature

ISO 7801, Metallic materials — Wire — Reverse bend test

### 3 Supply of Materials

General requirement relating to supply of steel wire material for staples, pins and clips shall conform to ISO 404.

### 4 Chemical Composition

The material when analyzed by any method specified in ISO/TR 9769 shall have a chemical composition as given in Table 1.

Table 1: Chemical composition

TYPE	Composition in Percentage (%), Maximum			
	Carbon	Manganese	Sulphur	Phosphorous
Type 1 and 2	0.25	0.9	0.06	0.06
Type 3	0.6	0.9	0.05	0.05

### 5 Freedom from defects

5.1 All finished wires shall be well and cleanly drawn to the dimensions specified. The wire shall be free from splits, surface flaws, rough, jagged and imperfect edged and other harmful surface defects.

5.2 The wire surface should be bright shining.

### 6 Sizes and Tolerances

#### 6.1 Round wires

Various standard sizes of round wire and their tolerances are given in Table 2:

Table 2: Round wire sizes and tolerances

Diameter, mm	Tolerances, mm
0.40 0.45 0.50 0.55	$\pm 0.010$
0.60 0.65 0.70 0.75 0.80	$\pm 0.015$
0.85 0.90 0.95 1.00 1.10 1.20	$\pm 0.020$

#### 6.2 Rectangular wire

The cross-sectional dimensions of the various sizes of rectangular wire and their tolerances are given below:

Table 3: Rectangular wire sizes and tolerances

Thickness, mm	Width, mm	Tolerances on thickness or width, mm
0.35	0.50	± 0.05
0.45	0.70	
0.55	0.75	
0.55	0.80	

6.3 Sizes and tolerances of wires and shape other than round and rectangular shall be as per agreement between the supplier and the purchaser.

## 7 Finish

The material shall be supplied in bright drawn, copper coated, galvanized or tin-coated finish as agreed to between the purchaser and the manufacturer. The galvanized coating of steel wire shall conform to the requirements of light coating as given in ISO 1461.

The coating test for other finishes shall be as agreed to between the purchaser and the manufacturer.

## 8 Physical Tests

### 8.1 Tensile Test

Tensile test of steel wire, when specified, shall be done in accordance with ISO 6892-1. Values of tensile strength of cold drawn steel wire shall be as follows:

Table 4: Tensile Strength

	Tensile Strength		Usage
	N/mm <sup>2</sup>	Kgf/mm <sup>2</sup>	
Type 1	590 - 880	60 - 90	Light duty staples
Type 2	685 - 980	70 - 100	Pins and clips
Type 3	1175 - 1570	120 - 160	Heavy duty staples
<b>Note:</b> 1 N/mm <sup>2</sup> = 1 MN/m <sup>2</sup> = 0.1020 kgf/mm <sup>2</sup>			

#### 8.1.1 Number of tensile tests

One tensile test shall be carried out for every 10 coils or part thereof and where the wire has been cut into lengths, for every 10 or part thereof.

### 8.2 Reverse Bend Test

One bend test shall be carried out for every 5 tones or part thereof of the finished wire. The test piece when tested in accordance with ISO 7801 shall withstand without sign of failure being bent forward and backward three times through 180° over a diameter equal to six times the wire diameters, the first bend of 90° not being counted.

## 9 Retest

9.1 Should any one of the test pieces first selected fail to pass any of the tests specified in this standard, two further samples shall be selected for testing in respect of each failure. Should the test pieces from both these additional samples pass, the material represented by the test samples shall be deemed to comply with the requirements of that particular test.

Should the test pieces from either of these additional samples fail, the material represented by the test samples shall be considered as not having complied with this standard.

## **10 Packaging and Marking**

10.1 Each coil or bundle of wire shall be bound and fastened compactly and shall have a tag legibly marked with the type, finish, size, length, weight and name of manufacturer.

10.2 For packed staples, pins and clips each unit shall be legibly marked with the following information:

- a) The manufacturer's name or trade name or trade mark;
- b) The batch identification or date of manufacture;
- c) The country of origin; and
- d) Quantity in the package

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