



**TANZANIA DRAFT STANDARD**  
**MEDC4 (4654) P3- Steel tubes and fitting – Methods for sampling**  
**(Rev TZS 151: 1982)**

FOR STAKEHOLDER'S COMMENTS ONLY

## **NATIONAL FOREWORD**

**0.1**The Tanzania Bureau of Standards is the statutory national standards body for Tanzania, established under the Act No. 3 of 1975, amended by Act. No. 2 of 2009.

This draft Tanzania Standard has been prepared by the Pipe and Pipes Fittings Technical Committee MEDC 4, under supervision of Mechanical Engineering Standards Divisional committee.

This draft Tanzania Standard is the identical adoption of IS 4711: 2008, Steel tubes and fittings - Method for sampling, published by the Bureau of Indian Standards (BIS)

### **0.2 Terminology and conventions**

Some terminologies and certain conventions are not identical with those used in Tanzania standards; attention is drawn especially to the following:-

The comma has been used as a decimal marker for metric dimensions. In Tanzania Standards, it is current practice to use "full point" on the baseline as the decimal marker.

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# Tanzania Standard

## Method of sampling of steel pipes, tubes and fitting:

### 1. SCOPE

- 1.1 This Tanzania Standard prescribes the methods of sampling and criteria for conformity for steel pipes, tubes and fitting.
- 1.2 It does not cover the sampling requirement for pressure and special pipes, such as boiler tubes and petroleum pipes.

### 2. TERMINOLOGY

For the purpose of this standard, the following definition shall apply:

- 2.1 **Tube**; pipe: A long, hollow, open-ended steel product of circular or other cross section. The terms `tube` and pipe` are often used synonymously.
- 2.2 **Item**: A unit such as tube, pipe or fitting meant for inspection or testing.
- 2.3 **Lot**: A collection of item of one type manufactured by the some process under similar condition of production.
- 2.4 **Lot size**: Number of item in a lot.
- 2.5 **Sample**: collection of item selected for inspection or testing from a lot.
- 2.6 **Sample size**: Number of item in sample.
- 2.7 **Defect**: Failure to meet the requirement imposed to an item with respect to a single characteristic.
- 2.8 **Defective**: An item having one or more defect.
- 2.9 **Acceptance number: a**: A maximum permissible number of defectives in the samples for acceptance of the lot.
- 2.10 **Rejection Number r**: The maximum permissible number of defectives in the samples for rejection of the lot.

### 3. PROCESS INSPECTION

- 3.1 The objective of inspecting and testing steel pipes, tube and fitting by the purchaser is to ensure their conformity to the requirement, whereas inspection done by the manufacture during production as also to maintain better control over the process. The manufacture may take representative samples of the item at regular intervals to control the quality fluctuations. The inspection control over the manufacturing process.

#### 4. LOT INSPECTION

4.1 In case adequate and satisfactory system of quality control has been maintained, the resulting data and information may be made available to the purchaser along with the items supplied to enable him to judge the acceptability of the lot. When it is not possible to make such information available to the purchaser or when the purchaser so desires, the procedure laid down in the following clauses shall be followed for determining the conformity of the lot of steel pipes, tube and fitting to the requirements of relevant specification.

4.1.1 The sample shall be selected and visually examined for each lot separately for ascertaining their conformity to the requirements of the related specification.

4.2 If agreed to between the parties concerned, the hydraulic test may also be conducted on each and every tube preferably before finishing.

4.2.1 The lot which has been found satisfactory in respect of visual characteristics shall be tested for mass and dimensional characteristics like length, thickness and diameter. The number of items to select from a lot for the checking of dimensional characteristics depends on the size of the lot and shall be taken in accordance with the relevant columns of Table 1. In case of circular pipes and tubes of outside diameter less than or equal to 200mm the scale of sampling would be in accordance with Columns 1 and 4 of Table 1. All these items shall be taken at random from the lot by using suitable procedure which ensures randomness.

4.3 Each of the items selected according to 4.2 shall be inspected for all dimensional characteristics and weight requirements. Any item failing to meet one or more dimensional requirements or individual tolerances for weight shall be considered as defective. If the number of defectives found in the sample checked for dimensional characteristics is less than or equal to the corresponding acceptance number, the lot shall be deemed as having met the dimensional requirements of the relevant specifications, otherwise not. The lot shall be deemed as having met the mass requirement of the relevant specifications, if the number of defectives found in the sample is less than or equal to the corresponding acceptance number and the total mass of the lot is within the tolerance wherever applicable.

4.3.1 In the case of those lots which have been found unsatisfactory, all the items in the lot may be inspected for dimensional characteristics and the defectives be removed, if agreed to between the purchaser and the supplier.

4.4 The lot shall also be tested for appropriate physical characteristics like tensile strength, bend, flattening and drift tests. The number of items to be drawn in accordance with Table 2 may be taken at random from that already drawn for dimensional inspection.

4.4.1 From each of the items so chosen, the required number of tests specimens shall be prepared for conducting the physical tests specified. The manner of preparation of test specimens as well as their dimensions shall be in accordance with the

relevant specifications. Any item failing to meet the requirements of a physical test shall be considered as defective.

**Table 1 – Scale of sampling and permissible numbers of defectives for dimensional Characteristics**

Lot size	Pipes or tubes (Outside diameter 200mm Max)		Others	
	Sample Size (s)	Acceptance number (a)	Sample size (s)	Acceptance Number (a)
Up to 100	3	0	2	0
101 to 150	5	0	3	0
151 to 300	8	0	5	0
301 to 500	13	0	8	0
501 to 1000	20	1	13	0
1001 to 3000	32	2	20	1
3001 to 10000	50	3	32	2
10001 and above	80	5	50	3

**TABLE 2- scale of sampling and permissible number of defectives for physical tests (Tensile, Bend, Flattening and Drift)**

Lot size	Stage of the sample	Sample size For each Physical test	Acceptance number	Rejection number
Up to 100	First	1	0	See note 1
101 - 150	First	2	0	See note 1
151 - 300	First	3	0	2
	Second	3	0	1
301 - 800	First	5	0	2
	Second	5	1	2
801 - 3000	First	8	0	2
	Second	8	2	3
3001 and above	First	13	1	3
	Second	13	3	4

NOTE-

1. If one sample fails to meet the requirement, the purchaser may select 2 samples randomly from the same lot and both the samples should comply with the requirements except the original failed length.
2. The test pieces for physical tests may be cut from the same item wherever possible.

4.5 For any of the physical tests, if in first sample the number of defective items is less than equal to the corresponding acceptance number,  $a$ , the lot shall be declare as conforming to the requirement of that test.

If the number of defectives is greater than or equal to the corresponding rejection number  $r$ , the lot shall be deemed as not meeting the requirement of that particular physical test. If the number of defectives is greater than the acceptance number but less than the rejection number, a Second sample of same size as the first shall be taken to determine the conformity or otherwise of the lot. The number of defective found and if the combine number of defective is less than or equal to the corresponding acceptance number of the second sample, the lot shall be declared as conforming to the requirements of the particular physical test, otherwise not.

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**ANNEX A**  
**RECOMMENDED LEVELS OF INSPECTION/ TESTING**

Characteristics For inspection/testing	Frequencies of inspection/Testing pipes and tubes Manufactured by	
	Seamless process	High frequency Induction welding (HFIW)
Chemical composition	A ladle analysis From every cast	A ladle analysis From every cast
Visual inspection for Surface defects And steel defect	Each pipe and tube	Each pipe and tube
Outside diameter	All pipes and tubes	One per hour
Thickness	All pipes and tubes	One per hour
Length	All pipes and tubes	One per hour
Tensile test	One coil from each cast	One coil from each cast
Bend test	One for every 20 or part thereof	One coil from each cast
Flattening test	One for every 20 or part thereof	One every half hour
Drift test	One for every 20 or part thereof	One every half hour
Hydraulic test	Each pipe and tube	Each pipe and tube



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