

# Difference Between EN39 & BS1139 Scaffold Standard-LINYI QUEEN SCAFFOLDING

In the scaffolding industry, different countries have their own scaffold standards. For example, the ANIS standard is the USA standard, the CSA standard for Canada standard, the AS standard for Australia and New Zealand, the JIS standard is for Japan, the KS standard for Korea, the SANS standard for South Africa, the SS standard for Singapore. BS and EN standard Europe countries, etc.

Among them, BS EN standards are widely used globally wide. It is a British standard originally from the UK and widely used in whole European countries, then other countries.

Till now, a lot of countries buy scaffolding materials according to BS EN standards. In the BS EN standards, the most popular two standards are BS1139 and EN 39 standards. Both of them are used for scaffold tube quality judgment.

Some world-class oil gas companies have their internal scaffolding standards, like the Saudi Aramco scaffold safety handbook, Shell DEP standard, KOC scaffolding standard, KNPC standard, etc. But the basic original of these oil gas companies ' standards requirements is from the BS 1139 and EN 39 standards.

- What is the difference between these two leading scaffold standards?
- How to choose scaffold standards for the scaffold material?

## Differences Between BS1139 and EN 39 Standard

### What is BS1139:1990 Standard?

The BS1139: 1990 includes a series specifying the requirements for the design, construction, and testing of equipment for use in scaffolding and other temporary structures. It specifies requirements for steel tubing of the type traditionally used in tubular scaffolding and false work. Recommendations for the design of tubular scaffolding structures are given in BS 5973 and BS 5974. This standard was previously published as Part 1 of BS 1139:1982 which also contained specifications for aluminium scaffold tubes. With the exception of specifying one wall thickness only (i.e. 4 mm), this standard technically aligns with European Harmonization Document HD 1039. Tubing complying with this British Standard also complies with the requirements for type 4 only of HD 1039 and therefore can be classified and marked "EN 39" (see clauses **8** and **9**).

BS 1139 is now published in separate Parts and Sections as follows.

— *Part 1: Tubes;*

— *Section 1.1: Specification for steel tube;*

— *Section 1.2: Specification for aluminium tube;*

- *Part 2: Couplers;*
- *Section 2.1: Specification for steel couplers, loose spigots and base plates for use in working scaffolds and falsework made of steel tubes (Identical with HD 74);*
- *Section 2.21): Specification for steel and aluminium couplers, fittings and accessories for use in tubular scaffolding;*
- *Part 3: Specification for prefabricated access and working towers;*
- *Part 4: Specification for prefabricated steel splitheads and trestles;*
- *Part 52): Specification for materials, dimensions, design loads and safety requirements for service and working scaffolds made of prefabricated elements (Identical with HD 1000).*

(From **BS1139:1990**).

## **What is EN 39 Standard?**

This British Standard is the official English language version of EN 39:2001.

It supersedes BS 1139-1.1:1990 which is withdrawn. This standard includes a tube with a wall thickness of 3,2 mm as well as the previous 4,0 mm. The other principle changes are contained in the European foreword of this standard. The UK participation in its preparation was entrusted by Technical Committee B/514, Access and support equipment, and ISE/8, Steel pipes, to Subcommittee B/514/28, Props, tubes and couplers, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

## **Cross-references**

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI

Standards Electronic Catalogue. A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application. (From EN 39)

## BS1139 VS EN 39 Standard

### 1. In Chemical Components:

- BS1139 Chemical Components: Carbon(C), Silicon(Si), Phosphorus(P), Sulphur(S), and Nitrogen(N)

**Table 1 — Determination of chemical composition of steel by ladle analysis**

Elements	%
Carbon	$\leq 0,20$
Silicon	$\leq 0,30$
Phosphorus	$\leq 0,05$
Sulphur	$\leq 0,05$
Nitrogen	$\leq 0,009$

Table 2 – BS1139 Chemical Composition

- EN39 Standard Chemical Components: Carbon(C), Silicon (Si), Manganum(Mn), Phosphorum(P), Sulfur(S), and Aluminum(Al)

**Table 1 — Chemical composition and Mechanical Properties**

Steel grade		Chemical composition (cast analysis), in %, by mass						Mechanical properties		
		C	Si	Mn	P	S	Al	Yield strength $R_{eH}$ min	Tensile strength $R_m$	Elongation $A$ min
Steel name	Steel number	max.		max.	max.	max.	min.	MPa <sup>1</sup>	MPa <sup>1</sup>	%
S235GT	1.010 6	0,20	<sup>a, b</sup>	1,40	0,040	0,045	0,020	235	340/520	24
<sup>a</sup> $\leq 0,05\%$ (range 1) ( $\leq 0,04\%$ if option 2 is specified) or $\geq 0,15\% \leq 0,25\%$ (range 2). <sup>b</sup> When bare tubes are specified (see option 8) the range shall be reported at the time of enquiry and order.										

Table 3 – EN 39 Chemical & Mechanical

You can find that BS1139 standards give the requirement of N, while EN 39 scaffold standards give the requirement of Al in chemical composition.

**2. Mechanical Property:**

- EN 39 Mechanical Property(See Above Table)
  - Yield Strength: Min 235 MPa
  - Tensile Strength: 340-520 MPa
  - Elongation: Min 24%
- BS1139 Mechanical Property (See Table 4):
  - Yield Strength:  $\geq 235$  MPa
  - Tensile Strength: 340-480 MPa
  - Elongation: $\geq 24\%$

## 4.2 Mechanical properties

The mechanical properties of the tube shall be in accordance with Table 2.

**Table 2 — Mechanical properties**

Tensile strength	$R_m$	N/mm <sup>2</sup>	≥ 340 < 480
Yield stress	$R_{eH}$	N/mm <sup>2</sup>	≥ 235
Elongation (on $L_0 = 5,65 \sqrt{S_0}$ ) <sup>a</sup>	$A$		≥ 24 %
<sup>a</sup> In accordance with BS 18 $L_0$ = original gauge length of the tensile test piece. $S_0$ = original cross-sectional area of the gauge length.			

Table 4 – BS1139 Mechanical Property

Thus for mechanical properties, EN 39 scaffold standard requires 40 MPa higher than BS1139 on tensile strength property.

### 3 Tolerance Requirement Comparision :

Items	EN39	BS1139
Outerside Diameter	±0.5mm	
Inside Diameter	Allow Insert Guage 37.7mm diameter	40.3mm -2.6mm
Wall Thickness	- 10% Seamless -15%	- 10%
Mass	-7.50%	4.37KG/M +12% - 8%
Length(Exact)	0/+10 (≤6m)	

### 4 EN 39 and BS1139 Standard Requirement On Marking

- EN 39 Marking Requirement:
  - 1) the number of this European Standard (EN 39);
  - 2) the name or trade mark of the manufacturer;
  - 3) the thickness type, 3 or 4.

Example of die marking – EN 39 xxx 4.

xxx = name or trademark of manufacturer

- BS1139 Marking Requirement  
Tubes shall be marked by impressing at intervals not exceeding 1,5 m. The height of the characters shall be at least 4 mm and the impression at least 0,2 mm deep.

The marking shall show

- the name or trade mark of the tube manufacturer;
- the EN number “39”,
- the letter “A” or “B” for silicon content as appropriate;
- the nominal wall thickness “4”, which shall not be positioned immediately adjacent to the number “39”.

After application of the protective coating an additional durable mark shall be applied to the tubes at intervals not exceeding 1,5 m showing the name or trade mark of the coating applier.

## **5 Cost Comparision**

**EN39 Scaffold Steel Tube Cost is more Expensive Than BS1139.**

## **6. For Different Types of Scaffolding Pipes**

**BS1139:1990 standard is main for 4.0mm scaffold tubes.**

**EN39 standard is for both 4.0mm and 3.2mm scaffold tubes**

## **How to Choose EN 39 or BS1139 Standards**

BS1139:1990 standards are normally for 4.0mm wall thickness scaffold tubes. If you want a type 4(4.0mm) scaffold tube, can use the BS1139 standard.

En 39 standards have requirements for both 3.2mm and 4.0mm scaffold tubes. Thus you can choose the right standard for your scaffold tube specifications.

The aluminum chemical composition makes the scaffolding tubes more toughness. Thus EN39 scaffold tubes are suited for low-temperature countries. They need less hardness in cold weather.

BS1139 is cheaper in cost. Thus if you want to save cost, can choose the BS1139 standard.

# EN39 Scaffolding Pipe Size&Specification

EN39 Scaffolding Pipe Size&Specification			
NO.	Items Code	Size( ODxTHxL)	Weight(KG)
1	0.5m EN39 Scaffold Tube	OD48.3x4.0mmx0.5m	2.19
2	0.7m EN39 Scaffold Tube	OD48.3x4.0mmx0.7m	3.07
3	1.0m EN39 Scaffold Tube	OD48.3x4.0mmx1.0m	4.38
4	1.2m EN39 Scaffold Tube	OD48.3x4.0mmx1.2m	5.26
5	1.5m EN39 Scaffold Tube	OD48.3x4.0mmx1.5m	6.57
6	2.0m EN39 Scaffold Tube	OD48.3x4.0mmx2.0m	8.76
7	2.5m EN39 Scaffold Tube	OD48.3x4.0mmx2.5m	10.95
8	3.0m EN39 Scaffold Tube	OD48.3x4.0mmx3.0m	13.15
9	3.5m EN39 Scaffold Tube	OD48.3x4.0mmx3.5m	15.34
10	4.0m EN39 Scaffold Tube	OD48.3x4.0mmx4.0m	17.53
11	4.5m EN39 Scaffold Tube	OD48.3x4.0mmx4.5m	19.72
12	5.5m EN39 Scaffold Tube	OD48.3x4.0mmx5.5m	24.10
13	6.0m EN39 Scaffold Tube	OD48.3x4.0mmx6.0m	26.30
14	6.4m EN39 Scaffold Tube	OD48.3x4.0mmx6.4m	29.05

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